
FCC Part 15 Subpart C
Frequency Spread Spectrum Transmitter
Class 2 Permissive Change Test Report

Appendix B

Antenna Specifications

Manufacturer: Proxim Corporation

Model: B11FNF

Variants: ◇ 153180-0001 Omni
◇ 153325-0001 Omni
◇ 155845-0411 Omni
◇ 155846-0001 Omni
◇ 480424-0411 Omni
◇ 460601-3020 Directional
◇ 480429-2703 Directional
◇ 480429-2712 Directional
◇ 480429-3508 Directional

FCC ID: HZB-B11FNF
Project No: 03-014

Table Of Contents

LXE Spire Antennas 3-6db 155845-001 & 155846-001	3
MobileMark 9db Antenna 480424-0411	5
Cushcraft 7.5db Antenna 480429-3508	6
Cushcraft 12db Antenna 480429-2703	7
Cushcraft 0db Antenna 153180-0001	9
Cushcraft 0db Antenna 153325-0001	11
Cushcraft 15db Antenna 460602-3020	12
Hypergain 15db Antenna 480429-2712	13

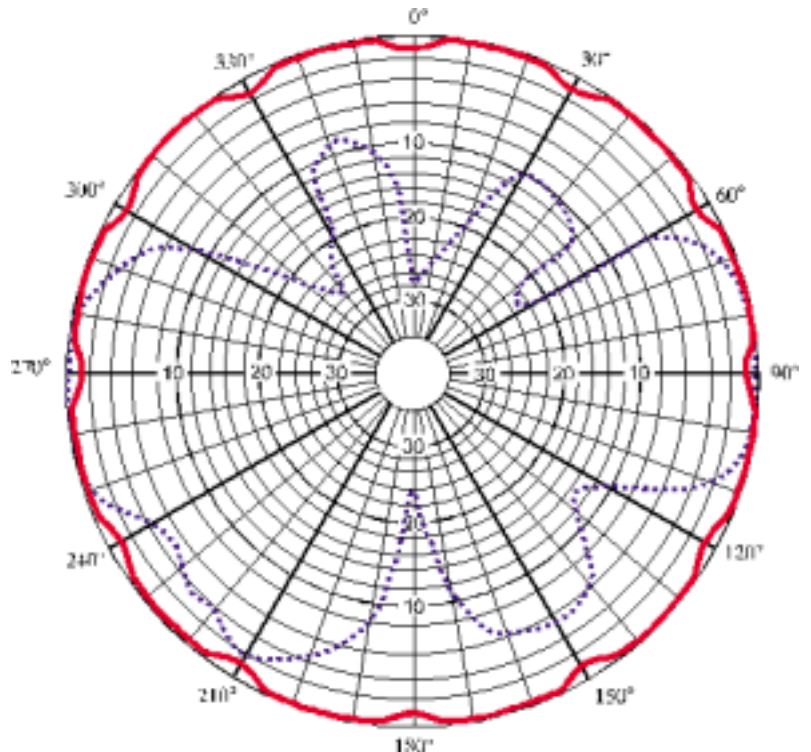
OMNIDIRECTIONAL ANTENNA

LXE® Spire™ Antenna Product Data Sheet



The LXE Spire antenna's unique design provides improved pattern integrity over other omnidirectional antennas currently available in the marketplace. The omnidirectional antenna comes in both high and medium gain configurations and can be paired with a number of accessories - NEMA enclosures, plenum-rated ceiling enclosures - to meet your specific installation requirements. By combining LXE's unmatched radio experience with EMS Technologies advanced antenna designs, LXE offers an unparalleled 2.4 GHz wireless network solution.

- Greater throughput for 2.4 GHz solutions.
- Superior performance in high multipath environments.
- Improved pattern integrity.



..... Typical 2.4GHz Omni Antenna
—— LXE Spire Antenna



TECHNICAL SPECIFICATIONS

LXE Spire Antenna



LXE ceiling enclosure for indoor environments.



LXE Radome

Electrical Characteristics

- Frequency
2.4 to 2.5 GHz
- Impedance
50 ohms
- VSWR
1.5 : 1
- Polarization
Vertical
- High gain version
Gain - 6 dBi typical
Beamwidth - 20° typical
- Medium gain version
Gain - 3 dBi typical
Beamwidth - 40° typical
- Pattern
Omnidirectional

Mechanical Characteristics

- Height
High gain w/o radome - 6"
Medium gain w/o radome - 3"
Radome - 6.2"
- Weight
No radome or bracket - .10 lbs.
With radome and bracket - 2.1 lbs.
- Radome material
Royalite R450M
- Radios supported
2.4 GHz FHSS
2.4 GHz DSSS
- Connector
Reverse TNC
- Temperature
-40°C to 70°C
- Mounting options
Ceiling enclosure
Masts

Configuration	Vertical Beamwidth	Down Tilt	Antenna Length
High gain on ground plane	25°	25°	6"
Medium gain on ground plane	28°	12°	3"
High gain off ground plane	35°	35°	6"
Medium gain off ground plane	40°	5°	3"



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Internet : www.lxe.com

Wireless Solutions. Guaranteed.





OD9 Mounted & Reflector Kit

OD9, OD12, OD6 Shown

OD Series Omni Antenna

For WLAN, Video, PCS, and Data Systems

- 3 dBi, 6 dBi, 9 dBi & 12 dBi antennas provide uniform omni coverage
- Unique design allows economical build out
- Mounting kit includes all hardware needed
- Reflector option provides directional beamshaping & increased performance

The OD Series Antennas are optimized for use in a wide variety of wireless systems. Typical uses include WLAN access points or bridge, PCS Microcell, WLL and surveillance transmitters.

These antennas consist of a collinear array with elements stacked vertically. Unique phasing cancels out-of-phase current distribution, improving system performance. This design maintains an omni pattern in the horizontal plane. The OD Series are free space antennas; no ground plane is required.

An option for the OD series is a reflector kit that beam shapes the omni pattern into a directional cardioid shape. This can result in improved directional gain, and isolation for reduced interference.

The low profile black radome (1" diameter) makes the antennas durable and rugged. They can withstand the harshest environments of snow, wind, rain and ice. The feed assembly is made of precision machined aluminum components and is irradiated for weather protection. The antennas comes with all the hardware needed to install it to a mast. The OD antennas normally terminate with a female N connector. Optional models include pigtail cable

with connector. For ISM, Part 15 compliant connectors are available (reverse polarized), please consult factory.

Model Numbers

Model	Freq.(MHz)	Gain	Applications
OD6-1800	1700-1900	6 dBi	PCN, Surveillance
OD9-1800	1700-1900	9 dBi	PCN, Surveillance
OD6-1900	1850-1990	6 dBi	PCS, CDMA/TDMA
OD9-1900	1850-1990	9 dBi	PCS, CDMA/TDMA
OD3-2400	2400-2485	3 dBi	WLAN, ISM, Video
OD6-2400	2400-2485	6 dBi	WLAN, ISM, Video
OD9-2400	2400-2485	9 dBi	WLAN, ISM, Video
OD12-2400	2400-2485	12 dBi	WLAN, ISM, Video

Frequencies subject to bandwidth constraints; confirm desired frequencies at time of order. For pigtail cable options and special frequencies, please consult factory for latest model numbers and configurations.

Reflector Options

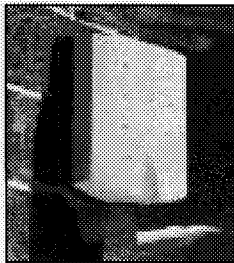
Reflector Options	Model
Add-on kit for 6 dBi models	ODR6-Kit
Add-on kit for 9 dBi models	ODR9-Kit
Add-on kit for 12 dBi models	ODR12-Kit

Specifications

Frequency & Gain:	See above	Material:	Polycarbonate radome, aluminum feed
Bandwidth @2:1 SWR:	140 MHz, 85 MHz for OD12	Length/Weight:	
Nominal Impedance:	50 ohms	3 dBi Models	16 inches, 1.5 lbs
Max. Power (continuous):	100 watts	6 dBi Models	19 inches, 1.5 lbs
Vertical Beamwidth (-3 dB point):		9 dBi Models	27 inches, 2.0 lbs
3 dBi Model	55 degrees	12 dBi Model	41 inches, 2.5 lbs
6 dBi Models	25 degrees	Antenna Diameter:	1", main mast
9 dBi Models	14 degrees	OD Series Interface:	N female connector
12 dBi Model	7 degrees	Mounting Kit:	Mast mount kit included
Wind Loading (flat plate equiv.):	30-40 sq. inches	Mounting Dimensions:	Use mast up to 2" OD
Rated Wind Velocity:	100+ mph	Options:	Reflector Option Kit
Lightning Protection:	External suggested		Pigtail Cable Option
			Part 15 Reverse Connectors

CONTEMPORARY PATCH

- Indoor / outdoor
- Attractive styling
- Articulating
- Wall mountable



DirectLink has been designed to eliminate concerns over aesthetics in professional workplaces and neighborhoods. DirectLink's contemporary design and neutral color make it a perfect choice for these applications.

Ease of Installation

DirectLink is available in either a Standard Wall Mount or an Articulating Wall Mount Version. The Standard Wall Mount attaches flush to any interior or exterior wall surface. The Articulating Wall Mount allows the antenna to be wall mounted and adds the ability to steer the antenna's main lobe +/- 30 degrees in the horizontal plane. Adjustments can be made quickly and easily minimizing installation time while achieving peak performance. DirectLink's versatile mounting hardware kits not only allow the antenna to be mounted to virtually any structure available but they also allow the antenna's pattern to be directed precisely into the desired coverage area.

Both versions allow the feed cable to be routed to a terminal or base station mounted above or below the antenna and even allow the feed cable to be hidden behind the antenna and routed through the wall. In addition, the Standard Wall mount version may be mated with two optional mounting brackets for even greater installation flexibility. The Mast Mount Bracket is used for installations on masts from 1 to 2.5 inches (25 mm to 64 mm) in diameter. The Universal Mount Bracket permits up to 210degrees of tilt and 360 degrees of rotation for main lobe steering and can be attached to a mast or a flat surface. Both mounts are suitable for indoor and outdoor installations.



Performance and Durability

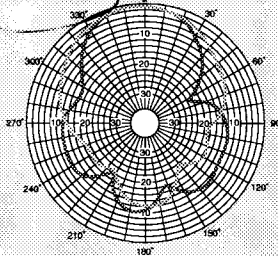
DirectLink Patch antennas are uniquely designed to provide superior performance. The antenna employs patch technology without the usual reliance on expensive and lossy dielectric substrates. Instead, an air dielectric technology, called MicroAir™ is used to decrease material cost and increase radiation efficiency.

Each antenna is provided with a standard low loss cable pigtail. A choice of SMA or TNC connectors is available. Other connector types are available upon request.

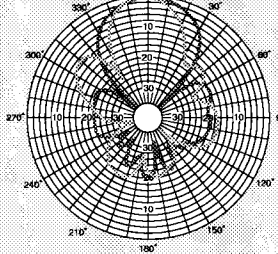
Solid brass elements are rigidly supported by the injection molded ultraviolet resistant enclosure. The enclosure components are designed to nest together during assembly creating a moisture barrier. The antenna will provide years of reliable, trouble free service.

----- E-Plane
----- H-Plane

S2307AMP



S57212AMP



FREQUENCY MHz	MODEL	GAIN dBi	3dB Bmwidth, deg.		VSWR	F/B dB	Connector (female)	Articulating Version
			E-Plane	H-Plane				
2300-2500	S2307AMP10TNF	7.5	50	65	1.5:1	12	TNC	Yes
2300-2500	S2307AMP10SMF	7.5	50	65	1.5:1	12	SMA	Yes
2300-2500	S2307MP10SMF	7.5	50	65	1.5:1	12	SMA	No
5150-5350	S51510AMP10TNF	10	27	58	1.5:1	15	TNC	Yes
5150-5350	S51510MP10TNF	10	27	58	1.5:1	15	TNC	No
5150-5350	S51510AMP10SMF	10	27	58	1.5:1	15	SMA	Yes
5150-5350	S51510MP10SMF	10	27	58	1.5:1	15	SMA	No
5150-5350	S51512AMP10TNF	12	27	45	1.5:1	15	TNC	Yes
5150-5350	S51512MP10TNF	12	27	45	1.5:1	15	TNC	No
5150-5350	S51512AMP10SMF	12	27	45	1.5:1	15	SMA	Yes
5150-5350	S51512MP10SMF	12	27	45	1.5:1	15	SMA	No
5725-5825	S57210AMP10TNF	10	27	58	1.5:1	15	TNC	Yes
5725-5825	S57210MP10TNF	10	27	58	1.5:1	15	TNC	No
5725-5825	S57210AMP10SMF	10	27	58	1.5:1	15	SMA	Yes
5725-5825	S57210MP10SMF	10	27	58	1.5:1	15	SMA	No
5725-5825	S57212AMP10TNF	12	27	45	1.5:1	15	TNC	Yes
5725-5825	S57212MP10TNF	12	27	45	1.5:1	15	TNC	No
5725-5825	S57212AMP10SMF	12	27	45	1.5:1	15	SMA	Yes
5725-5825	S57212MP10SMF	12	27	45	1.5:1	15	SMA	No

COMMON SPECIFICATIONS

Power: 75 Watts (25 Watts at 5 GHz)

Polarization: Linear

Dimensions & Weight:

Standard wall mount -

5.70 x 3.81 x 1.50 in.
(14.48 x 9.68 x 3.80 cm),
5 oz (.14 kg)

Articulating wall mt -

5.80 x 3.81 x 2.26 in.
(14.73 x 9.68 x 5.74 cm),
8 oz (.23 kg)

Connectors:

SMA, TNC. Other connector types available on special request.

Mounting:

Standard units for wall mounting. Mast mount bracket kits available. Custom mount configurations for volume users.

Cable: Low loss pigtail provided

Cushcraft Weatherized Low Profile Directional Panel Antennas

Antennas for PCS/DCS/PWC, ISM BAND, AMPS/GSM Bands

Cushcraft's line of low profile directional panel antennas span frequencies from 800 MHz through 5.8 GHz. (See DirectLink Series for 5.1-5.8 GHz antennas) and applications from Specialized Mobile Radio through the highest frequencies available for ISM band usage. Most are designed for use in both indoor and outdoor applications with multiple mounting configurations available in each case.

Electrically, Cushcraft low profile directional panel antennas are no compromise solutions offering precise and controllable pattern characteristics while still meeting the rigorous aesthetic requirements common to most contemporary office, home, healthcare facility, workplace and commercial building environments. These antennas are well suited both to system infrastructure requirements supporting microcells, picocells, access points and RF distribution systems and fixed subscriber applications like Wireless Local Loop.

Standard colors are gray or off-white. Custom configurations of radome finish, color and texture can be provided to compliment and blend into any environment.

These antennas are excellent solutions for system installers to build out seamless microcellular and picocellular cell sites quickly and efficiently. Wireless local loop applications for these antennas include industrial complexes, office environments, shopping malls, parking garages, airports, hospitals, campus settings and more.

S34012P



S34017P

Linear Polarization Panel Antennas

* See Directlink Series antennas on page 2 of catalog for additional 5.1, 5.7 and 3.4 GHz panel antennas.

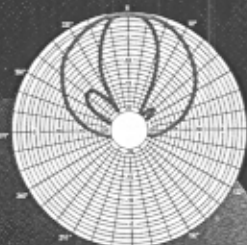
Cushcraft linearly polarized panel antennas feature high performance and versatility. All antennas in the series are provided with UV stabilized radome enclosures and can be mounted to either interior or exterior wall surfaces or masts in either fixed or articulating configurations. Models are available from 8 dBi to 17 dBi gain. *Integrated coaxial pigtails can be modified for length and connectors can be modified to suit the application.

* Consult your Cushcraft Sales Representative to discuss these alternatives.

PANEL ANTENNAS:

- UV Stable Indoor/Outdoor Housings
- Articulating Mounts Available
- See Selector Guide for Available Frequencies

■ H-Plane
■ E-Plane



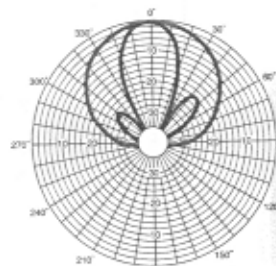
S34012P

S2407HVP

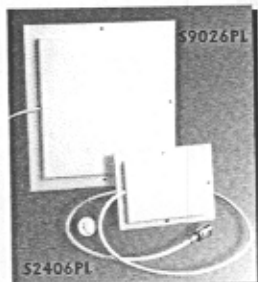
S18512P

OTHER BANDS AVAILABLE:

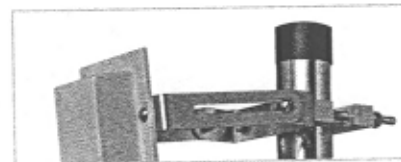
MODEL	FREQUENCY
S1857HVP12NF	1.85-1.99 GHz
S1717HVP12NF	1.71-1.88 GHz



S18512P

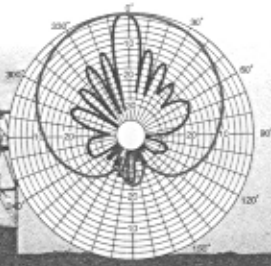


S2406PL



S2401290P

■ H-Plane
■ E-Plane



S2401290P

CUSHCRAFT

Cushcraft Dual Feed & Circular Panel Antennas

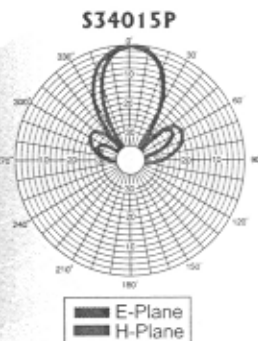
Dual Feed Panel Antennas

Dual feed panel antennas offer two ports for polarization diversity and are well suited to environments where multipath is a concern but space is limited. Polarization diversity allows the user to achieve the desired diversity benefit in the footprint of one antenna. All Cushcraft dual feed antennas feature a minimum of 18 dB of port isolation.

- HVP antennas offer diversity benefits in the footprint of a single antenna.



S2408PC

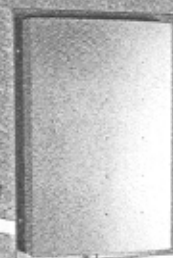


S34015P

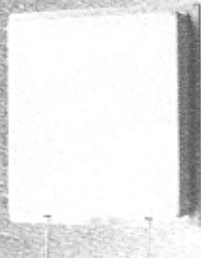
Circular Polarization Panel Antennas

Circular polarization antennas are a good choice for system applications where remote device orientation is random and widely variable.

- Circular Polarized antennas mitigate performance degradation sometimes caused by variation in remote terminal orientation.



S8248P

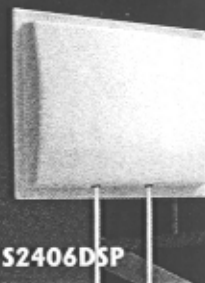


S888HVP



ALLMTP & ALLPMTW AVAILABLE

- Wall or mast mounting
- Universal articulation
- Low profile / Light weight



S2406DSP

**6 dB Diversity Directional Antenna
2 Antennas, 1 Package**

LINEAR PANEL SELECTOR GUIDE

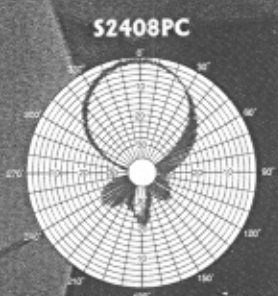
Model	Freq. MHz	Gain dBi	VSWR	Polarization	-3dB bandwidth		Weight lb (kg)	RF Connector (f)	Dimensions in. (cm)	Power (Watts)	Mount Style
					E-Plane	H-Plane					
S34012P12NF	3400-3600	12	1.5:1	Linear	27°	67°	.35 (.16)	N	3 x 7 x 7/8 (7.6 x 17.8 x 2.2)	50	Surface
S34015P12NF	3400-3600	15	1.5:1	Linear	34°	30°	.65 (.30)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	25	Wall/Mast
S34017P12NF	3400-3600	17	1.5:1	Linear	16°	18°	1.4 (.64)	N	11 x 10 x 7/8 (27.9 x 25.4 x 2.2)	25	Wall/Mast
S2406P	2400-2500	6	1.8:1	Linear	65°	70°	.5 (.23)	N	5.2 x 3.8 x 1/2 (13.2 x 9.7 x 1.4)	10	Wall/Surface
S2408P12NF	2400-2500	8	1.5:1	Linear	60°	65°	.5 (.23)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Surface
S2401290P12NF	2400-2500	12	2.0:1	Linear	10°	90°	1.0 (.45)	N	3 x 26 x 1 (7.6 x 66 x 2.5)	50	Wall/Mast
S24012P12NF	2400-2500	12	1.5:1	Linear	25°	65°	1.6 (.73)	N	6 x 13 x 1 (15.2 x 30.5 x 2.5)	50	Surface
S1858P12NF	1850-1990	8	1.5:1	Linear	62°	65°	.52 (.23)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Wall/Mast
S1851290P12NF	1850-1990	12	2.0:1	Linear	10°	90°	1.6 (.73)	N	34 x 3 x 1.2 (86.4 x 7.6 x 3.0)	50	Wall/Mast
S18512P12NF	1850-1990	12	1.5:1	Linear	25°	65°	1.6 (.73)	N	6 x 13 x 1 (15.2 x 33.0 x 2.5)	50	Wall/Mast
S1718P12NF	1710-1880	8	1.5:1	Linear	65°	65°	.52 (.23)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Wall/Mast
S1711290P12NF	1710-1880	12	2.0:1	Linear	10°	90°	1.6 (.73)	N	34 x 3 x 1.2 (86.4 x 7.6 x 3.0)	50	Wall/Mast
S17112P12NF	1710-1880	12	1.5:1	Linear	25°	65°	1.2 (.55)	N	6 x 13 x 1 (15.2 x 33.0 x 2.5)	50	Wall/Mast
S9026P	902-928	6	1.8:1	Linear	65°	75°	1.4 (.64)	N	9 x 10 x 1/2 (23 x 25.4 x 1.3)	25	Wall/Surface
S9028P12NF	902-928	8	1.5:1	Linear	65°	70°	1.9 (.86)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast
S888P12NF	880-960	8	1.5:1	Linear	65°	70°	1.9 (.86)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast
S8248P12NF	824-896	8	1.5:1	Linear	65°	70°	1.9 (.86)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast
S8068P12NF	808-866	8	1.5:1	Linear	65°	70°	1.9 (.86)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast

*Coax pigtail lengths and connector types can be modified to suit the application.

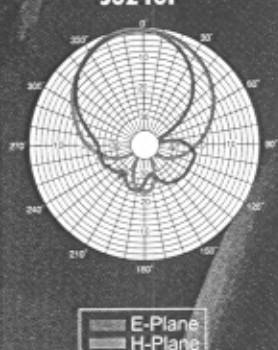
DUAL LINEAR (HVP) & CIRCULARLY POLARIZED (PC) SELECTOR GUIDE

Model	Freq. MHz	Gain dBi	VSWR	Polarization	-3dB bandwidth		Weight lb (kg)	RF Connector (f)	Dimensions in. (cm)	Power (Watts)	Mount Style
					E-Plane	H-Plane					
S2408SLP12NF	2400-2500	8	1.5:1	Dual Linear ± 45° *	65°	70°	0.6 (.27)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Wall/Surface
S1857SLP12NF	1850-1990	7	1.5:1	Dual Linear ± 45° *	65°	70°	0.6 (.27)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Wall/Surface
S1717SLP12NF	1710-1880	7	1.5:1	Dual Linear ± 45° *	65°	70°	0.6 (.27)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	50	Wall/Surface
S9028HVP12NF	902-928	8	1.5:1	Dual Linear V&H	65°	70°	2.2 (1.0)	N	12 x 12 x 1-3/4 (30.5 x 30.5 x 4.4)	50	Wall/Surface
S828HVP12NF	824-896	8	1.5:1	Dual Linear V&H	65°	70°	2.2 (1.0)	N	12 x 12 x 1-3/4 (30.5 x 30.5 x 4.4)	50	Wall/Surface
S888HVP12NF	880-960	8	1.5:1	Dual Linear V&H	65°	70°	2.2 (1.0)	N	12 x 12 x 1-3/4 (30.5 x 30.5 x 4.4)	50	Wall/Surface
S2408PC12NF	2400-2500	8 dBic	1.5:1	Circular	65°	65°	0.6 (.27)	N	12 x 12 x 1-3/4 (30.5 x 30.5 x 4.4)	1	Wall/Surface
S1857PC12NF	1850-1990	7 dBic	1.5:1	Circular	65°	65°	0.6 (.27)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	1	Wall/Surface
S1718PC12NF	1710-1880	7 dBic	1.5:1	Circular	65°	65°	0.6 (.27)	N	6 x 6 x 1-1/4 (15.2 x 15.2 x 3.2)	1	Wall/Surface
S9028PC12NF	902-928	7.5 dBic	1.5:1	Circular	65°	65°	1.25 (.57)	N	10 x 10 x 1.5 (25.4 x 25.4 x 3.8)	1	Wall/Surface
S828SLP12NF	824-896	8	1.5:1	Dual Linear ± 45°	65°	70°	2.2 (1.0)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast
S888SLP12NF	880-960	8	1.5:1	Dual Linear ± 45°	65°	70°	2.2 (1.0)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast
S9028SLP12NF	902-928	8	1.5:1	Dual Linear ± 45°	65°	70°	2.2 (1.0)	N	8 x 12 x 2 (20.3 x 30.5 x 5.1)	50	Wall/Mast

* S2408SLP, S1857SLP, S1717SLP also available in Dual Linear V & H.



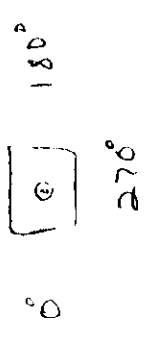
S2408PC



S8248P

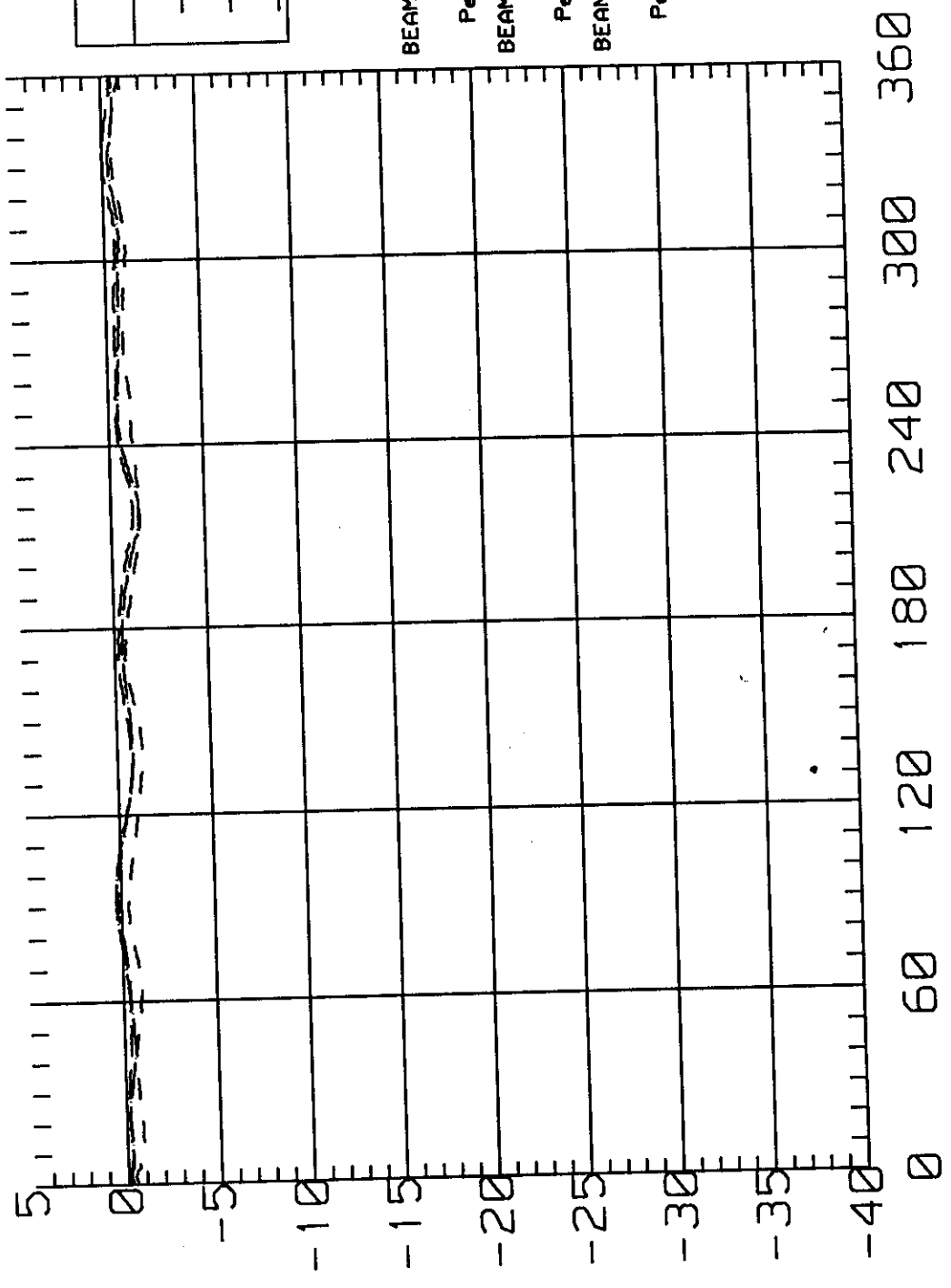
CUSHCRAFT CORPORATION

VMT Antenna
 Part#: 153180-0001
 Azimuth Pattern



A13A
 A13A
 A13A

LEGEND	
- - -	2.400 GHz
- - -	2.444 GHz
---	2.488 GHz



BEAMWIDTH OUT OF RANGE
 Peak = -3494 dB

BEAMWIDTH OUT OF RANGE
 Peak = 223 dB

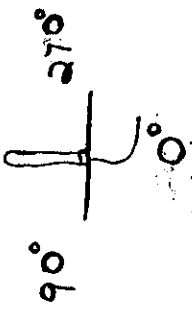
BEAMWIDTH OUT OF RANGE
 Peak = 3848 dB

ANGLE (DEG)

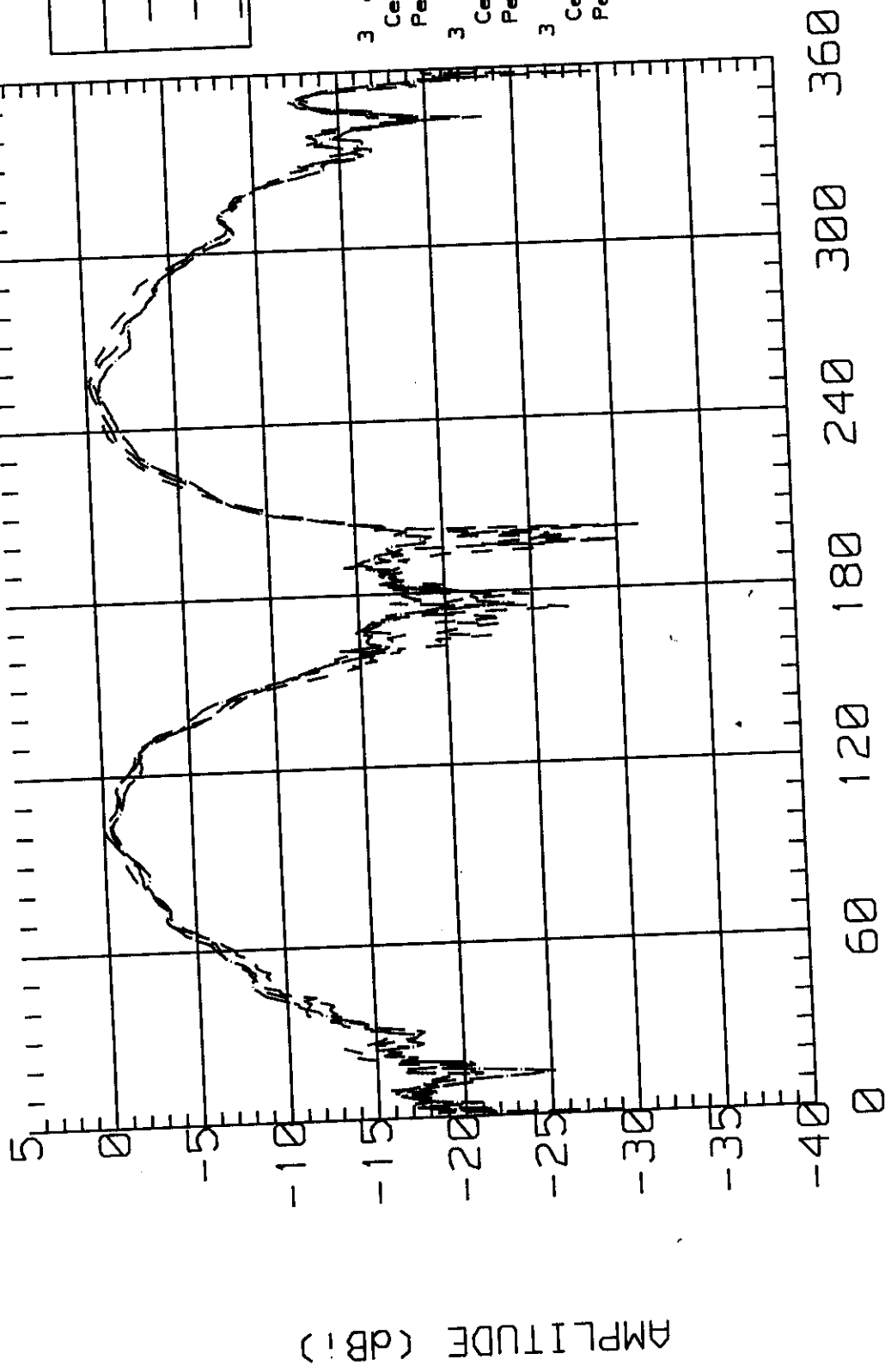
VMT Antenna
Part #: 153180-0001

Elevation Pattern

A13H
A13H
A13H



LEGEND	
- - -	2.400 GHz
- - -	2.444 GHz
- - -	2.488 GHz



- 3 dB Bmuth = 57.46
Centroid = 105
Peak = -3384 dBi
- 3 dB Bmuth = 54.98
Centroid = 104.4
Peak = -063 dBi
- 3 dB Bmuth = 57.55
Centroid = 103.3
Peak = -3982 dBi

ANGLE (DEG)

Data Transmission Omnidirectional Antennas

Our omnis are housed in long-life ultraviolet-stabilized polycarbonate radomes. They may be used indoors or outdoors without regard to the environment. Their radiation patterns have a tendency to fill the available space. There are a variety of mounting options from suspension ceiling clamps to pole mounts.

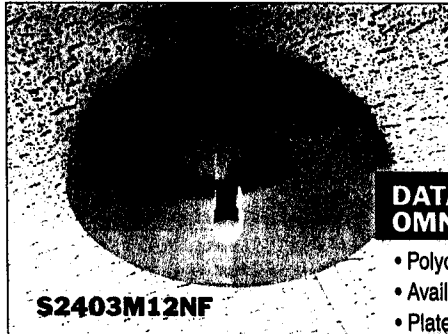
Omnidirectional antenna designs are also available for any frequency between 25 MHz and 6 GHz. Please call our sales engineers for complete information.

2.4 GHz Monopole Omni

The Cushcraft 2.4 GHz monopole antenna has a large backplane and is designed for applications with a very focused omnidirectional pattern where an in-building system is required. For example, the monopole could be used to focus signal directly into an area where it is very difficult to get any coverage.



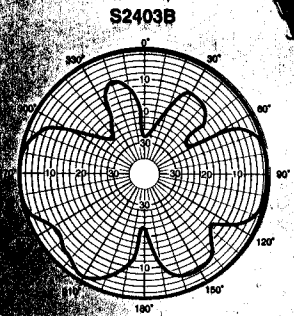
Suspended ceiling mount



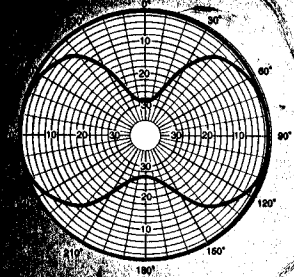
S2403M12NF

DATA TRANSMISSION OMNIS

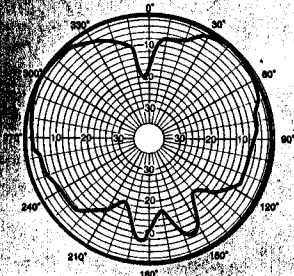
- Polycarbonate enclosure
- Available with ceiling mount
- Plated copper laminated radome
- Weatherproof designs with ultraviolet stabilizers
- Digital
- Broadband performance
- DC grounded
- Omnidirectional performance



— H-Plane
— E-Plane



S2400B



S2403M12NF

DATA OMNI SELECTOR CHART

Model	Freq. MHz	Gain dBi	Bandwidth 1.5:1 MHz	3dB bandwidth E-Plane	Height in (cm)	Volume in (cu)	Weight lbs (kg)	VSWR	Impedance (ohms)	SWR	Enclosure Material	Mount Style	Max Dia in (cm)
S8960B	896-960	0	64	75	17-1/2 (44.5)	0.56 (0.25)	0.083 (0.009)	125 (200)	150	Fiberglass	Tube end	2 (5.1)	
S8960BN12NF	896-960	0	64	75	9 (22.9)	0.36 (0.16)	0.122 (0.011)	125 (200)	150	Polycarbonate	Ceiling	N/A	
S8963B	896-960	3	64	38	30-3/4 (78)	1.19 (0.53)	0.176 (0.016)	125 (200)	150	Fiberglass	Tube end	2 (5.1)	
S8963BN	896-960	3	64	38	17 (43.2)	0.41 (0.18)	0.24 (0.022)	125 (200)	150	Polycarbonate	Ceiling	N/A	
S8964B	896-960	4	64	30	42-1/8 (107)	1.56 (0.70)	0.22 (0.02)	125 (200)	150	Fiberglass	Tube end	2 (5.1)	
S2400BP12NF	2400-2500	0	100	75	8 (20.3)	0.25 (0.11)	.11 (0.010)	125 (200)	50	Polycarbonate	Tube end	2 (5.1)	
S2403M12NF	2400-2500	0	100	75	9 (22.9)	0.29 (0.13)	0.122 (0.011)	125 (200)	50	Polycarbonate	Ceiling	N/A	
S2403BP12NF	2400-2500	3	100	38	13-1/2 (34.3)	0.41 (0.18)	0.22 (0.02)	125 (200)	50	Polycarbonate	Tube end	2 (5.1)	
S2403BH12NF	2400-2500	3	100	38	9 (22.9)	0.31 (0.14)	0.122 (0.011)	125 (200)	50	Polycarbonate	Ceiling	2 (5.1)	
S2403M12NF	2400-2500	0	100	60	2 (5.1)	16 (4.48)	.02 (.002)	125 (200)	50	Polycarbonate	Ceiling	N/A	

Common Specifications: VSWR - 1.2: nominal; Connector Type - N-female; Element material - printed circuit



PRODUCT DATA SHEET



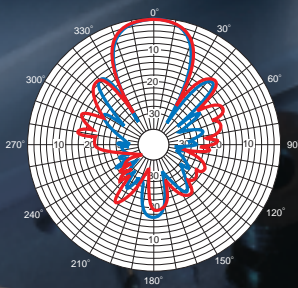
2.4 GHz DATA TRANSMISSION YAGI

- UV stable housing
- One piece brass radiating element
- Advanced microwave substrate
- Stainless steel hardware
- UltraLink® Pigtail

IMPORTANT NOTE:

Two sets of weep holes are provided in the **PC2415NRBNAI120P** radome—one set is required for horizontal mounting and one set for vertical mounting. Prior to installation, the unused pair of weep holes must be plugged with silicone sealant to prevent leakage. A small disposable packet of sealant is supplied with each antenna for this purpose. Weep-hole locations are shown in the installation manual

■ H-Plane
■ E-Plane



PC2415N

PC2415RBNAI120P



2.4 GHz Directional Yagi Antenna

The PC2415RBNAI120P provides users with an easy to install, high gain directional antenna for deploying 2.4 GHz point to point bridges, and can also be used as an access point antenna in long narrow coverage environments such as a tunnel. The antenna offers 13.9 dBi of gain and features an articulating mount that allows for both azimuth and elevation adjustment. The articulating mount allows the antenna's radiation pattern to be precisely directed into a desired coverage area or at a corresponding antenna servicing another bridge. The articulating mount is particularly useful when corresponding bridge antennas can not be mounted at the same elevation without involving the use of excessively long coax runs. The antenna comes equipped with 10' of plenum rated coax and reverse BNC connector allowing for direct connectivity to the access point or bridge.

DATA TRANSMISSION YAGI SPECIFICATION CHART

Model:	PC2415RBNAI120P
Frequency: MHz	2400-2500
Gain:	13.9 dBi
Number Elements:	15
Front-to-Back Ratio:	18 dB
E-Plane (3 dB beamwidth):	30°
H-Plane (3 dB beamwidth):	34°
Radiating Element:	Brass
Impedance (Ohms):	50
RF Connector:	Reverse BNC
Antenna Weight lb. (kg):	1.25 (.56)
Mounting:	Articulating mount
Dimensions in.(cm):	26-1/2 x 3-3/4 x 1-1/2 (67.3 x 9.5 x 3.8)
Enclosure:	UV Stable Polycarbonate
Mast Diameter Max. in (cm):	2-1/8 (5.4)
Ultralink Cable in (cm):	120 (30.5)

HyperGain® HG2415P-180

2.4 GHz 15 dBi 180 Degree Sector Panel Antenna

Superior Performance

The HyperGain® HG2415P-180 Sector Panel Antenna combines 15 dBi gain with a wide 180° beam-width. It is a professional quality "cell site" antenna designed primarily for service providers in the 2.4 GHz ISM band.

Rugged and Weatherproof

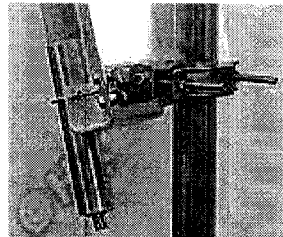
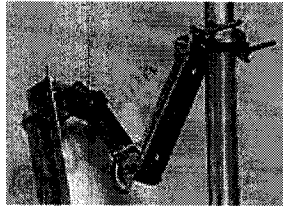
This antenna features a heavy-duty UV protected epoxy-fiberglass radome for all-weather operation. The included mounting system adjusts from 0 to 26 degrees down-tilt.

Ideal for Wireless Internet "Cell" Sites

This antenna is an ideal choice for Wireless Internet Provider "cell" sites since the cell size can be easily determined by adjusting the down-tilt angle. Horizontal coverage is a full 180 degrees.

Electrical Specifications

Frequency	2400-2500 MHz
Gain	15 dBi
Horizontal Beam Width	180 degrees
Vertical Beam Width	+/- 10 degrees
Impedance	50 Ohm
Max. Input Power	300 Watts
VSWR	< 1.5:1 avg.
Connector	N Female
Lightning Protection	Direct Ground



Mechanical Specifications

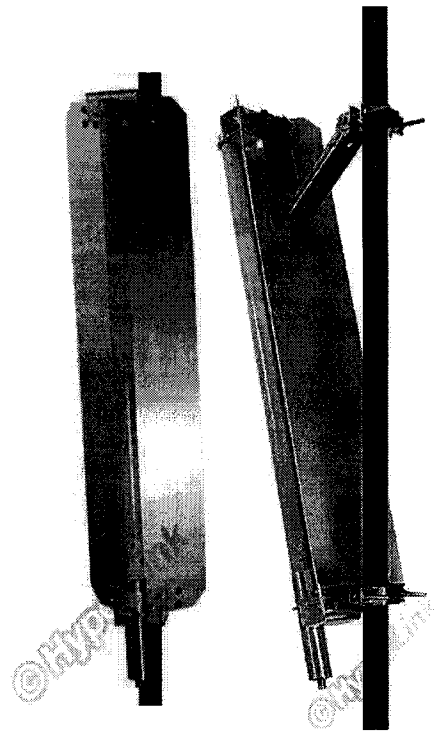
Weight	10 lbs. (4.54 Kg)	
Dimensions	41 x 8.5 x 6.5 inches (104 x 21.6 x 16.5 cm)	
Radome Material	UV Epoxy Fiberglass	
Reflector Material	Aluminum	
Mounting	2.75 inch (7 cm) O.D. pipe max.	
Polarization	Vertical	
Down-tilt (mech)	0 to 26 degrees (adjustable)	

Wind Loading Data

Wind Loading	Front Surface	Side Surface
Area	2.13 sq. ft. (.19 sq. meters)	1.00 (.09 sq. meters)
@ 100 MPH (161 KPH)	69 lbs. (31.3 Kg)	40 lbs. (18.1 Kg)

Guaranteed Quality

All HyperGain® antennas are tested and backed by Hyperlink's Limited Warranty.



HG2415P-180

