Worldwide Product Approvals

March 22, 1999

Federal Communications Commission
Equipment Authorization Division,
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

RE: KDZ480628-3700

Dear Sir:

Currently, LXE has a pending class 2 permissive change application to the above referenced FCC ID. We wish to include this new information in addition to the information submitted by US Tech on our behalf.

The purpose of this submittal to the above referenced FCC ID is to re-classify antennas already approved with this radio to use standard RF connectors. Currently, these antennas are approved with this radio with non-standard connectors only. The performance of the antennas have not changed, therefore additional testing was deemed to be not required. Only the connectors on the antennas have change. The antennas are:

- Cushcraft Model S2403N(X) - LXE P/N(s): 153599-0001 and 153600-0001
- Cushcraft Model S2400BFN(X) - LXE P/N(s): 153179-0001 and 153325-0001
- Cushcraft Model PC2145N(X) - LXE P/N(s): 460602-3020 and 460601-3020
- Cushcraft Model S406PLN(X) - LXE P/N: 481246-2400

Note: The (X) in the model names identify the gender of the antenna. The X would be replaced with an M for the male gender and an F for the female gender. LXE part numbers are given for each gender.

Specification sheets for each antenna follow this page. Photos of each antenna are also included but were submitted separately.

As mentioned above, the antennas described in this report use standard RF connectors(N type). LXE field service engineers prefer this method for ease of installation. To justify the use of this connector and to satisfy section 15.203 of the rules, we have included material that shows this equipment is only intended to be professionally installed by qualified LXE personnel or by a qualified LXE contractor.

Sincerely,

R. Sam Wismer

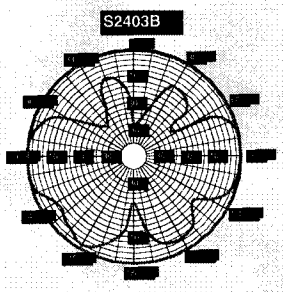
R. Sam Wismer
RF Approvals Engineer
LXE, Inc.

enc(s).

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.

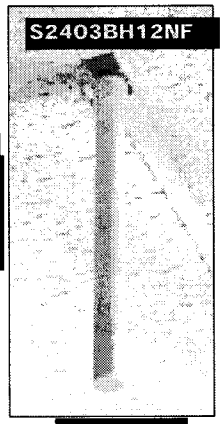
Omnidirectional antenna designs are also available for any frequency between 25 MHz and 6 GHz. Please call our sales engineers for complete information.



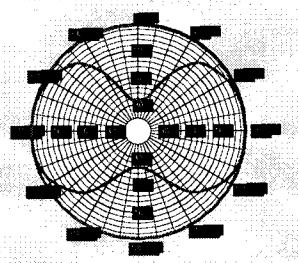
H-Plane
E-Plane

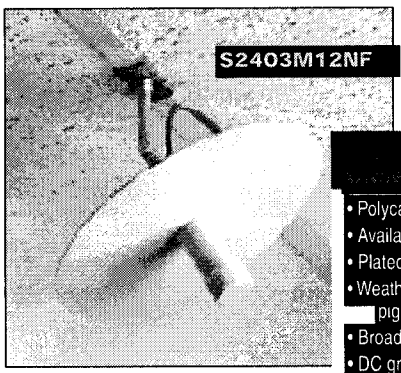
2.4 GHz Monopole Omni

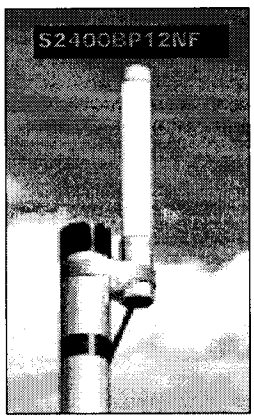
The Cushcraft 2.4 GHz monopole antenna has a large backplane and is designed for applications with a very focused omnidirectional pattern where an in-building system is required. For example, the monopole could be used to focus signal directly into an area where it is very difficult to get any coverage.



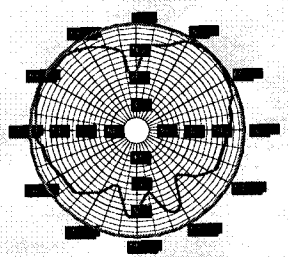
Suspended ceiling mount







- Polycarbonate enclosures
- Available with ceiling mounts
- Plated copper laminated radiator
- Weatherproof designs with UltraLink pigtail
- Broadband performance
- DC grounded
- Omnidirectional performance



DATA OMNI SELECTOR CHART

Model	Freq. MHz	Gain dBd	Bandwidth 1.5:1 MHz	-3dB bmwidth E-Plane	Height in (cm)	Weight lb (kg)	W/sur Area ft 1	W/survival mph (kph)	Power (Watts)	Enclosure Material	Mount Style	Mast 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)
S8963BN12NF	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)
S2400BH12NF	2400-2500	0	100	75	9 (22.9)	0.29 (0.64)	0.122 (0.011)	125 (200)	50	Polycarbonate	Ceiling	N/A
S2403BP12NF	2400-2500	3	100	38	11-1/2 (29.2)	0.41 (0.18)	0.08 (0.007)	125 (200)	50	Polycarbonate	Tube end	2 (5.1)
S2403BH12NF	2400-2500	3	100	38	11-1/2 (29.2)	0.31 (0.14)	0.08 (0.007)	125 (200)	50	Polycarbonate	Ceiling	N/A
S2403M12NF	2400-2500	1	100	60	2 (5.1)	0.5 (0.23)	.02 (.002)	125 (200)	50	Polycarbonate	Ceiling	N/A
S5703M12NF	5725-5825	1	100	60	1.5 (3.8)	0.4 (0.18)	.02 (.002)	125 (200)	20	Polycarbonate	Ceiling	N/A
S5703BP12NF	5725-5825	3	100	38	7 (17.8)	0.3 (0.14)	.06 (.006)	125 (200)	20	Polycarbonate	Tube end	2 (5.1)
S5703BH12NF	5725-5825	3	100	38	7 (17.8)	0.2 (0.1)	.06 (.006)	125(200)	20	Polycarbonate	Ceiling	N/A

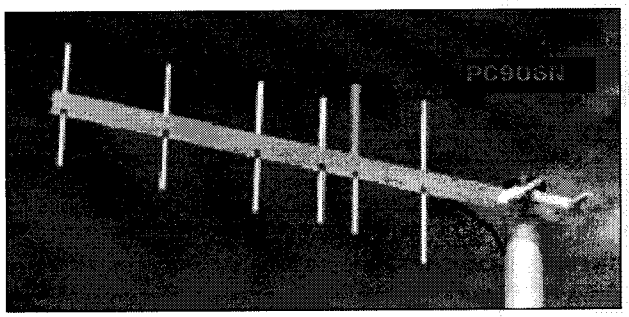
Common Specifications: VSWR - 1.2: nominal; Connector Type - N-female; Pigtail - 12" (30.5 cm); Element material - printed circuit

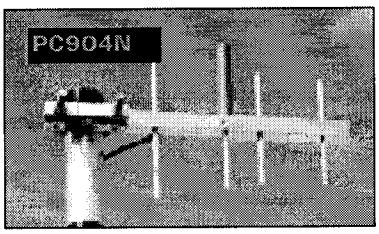
CUSHCRAFT
COMMUNICATIONS ANTENNAS

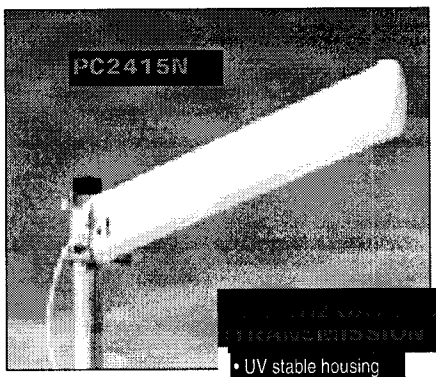
Custom Antennas To Meet Special Needs

Whatever your connector of choice, it is likely that Cushcraft can meet your needs. We stock connectors for most of the approved systems. Also, if you require special lengths of cable or other changes to the antenna, please do not hesitate to contact us. Cushcraft would like to respond to your need for new antenna designs. If you have a quantity requirement, please let us know.

Check our specifications in the Yagi Selector Chart. Look over the features in the Features Box. T n c your favorite distributor or the factory for immediate shipment or to ask any additional questions you may have.





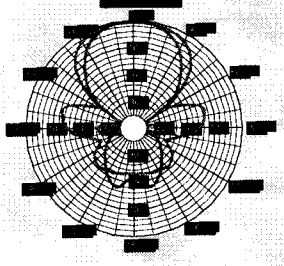


- UV stable housing
- One piece copper radiating element
- Advanced microwave substrate
- Stainless steel hardware
- UltraLink gtail

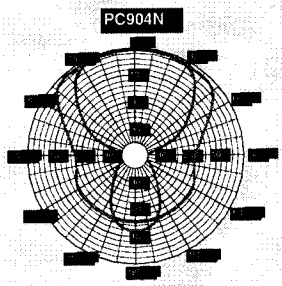
NEW 2.4 GHz Yagi

For those long-range directional applications, Cushcraft has designed the PC2415N Yagi. It produces a gain of 13.9 dBd and can be mounted in a number of ways. The model shown utilizes the flat plate design although many others could be used. Cushcraft has the ability to modify this model for OEM applications to fit your needs. The UV-stabilized polycarbonate radome shields the antenna from the sun and all weather conditions.

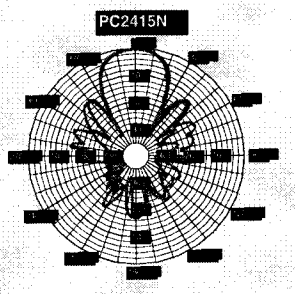
PC906N



PC904N



PC2415N



H-Plane
E-Plane

DATA YAGI SELECTOR CHART

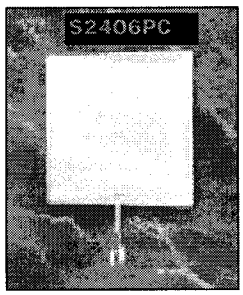
Model	Freq. MHz	Gain dBd	No. Elem	F to B dB	Bandwidth 1.5:1 -3dB Beamwidth E-Plane	H-Plane	Conn. Type (Female)	W/ surf. Area ft 1	W/ surv. mph (kph)	W/ 1/2" Ice	Length in (cm)	Wt. lb. (kg)
PC8910N	896-940	11	10	20	40	45	N	0.38 (0.035)	125 (200)	100 (161)	41-7/16 (105.2)	2.31 (1.04)
PC904N	896-980	6	4	12	70	100	N	0.11 (0.01)	125 (200)	100 (161)	13 (33)	1.12 (.50)
PC906N	896-940	8.5	6	18	55	65	N	0.26 (0.024)	125 (200)	100 (161)	24-3/4 (62.9)	1.62 (.73)
PC926N	928-960	8.5	6	18	55	65	N	0.26 (0.024)	125 (200)	100 (161)	24-3/4 (62.9)	1.61 (.72)
PC9010N	928-960	12	10	20	40	45	N	0.38 (0.035)	125 (200)	100 (161)	41-7/16 (105.2)	2.31 (1.04)
PC9013N	902-928	13	13	20	35	40	N	0.46 (0.043)	125 (200)	100 (161)	53-1/2 (135.9)	3.12 (1.40)

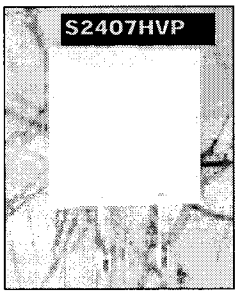
Common Specifications: **Power handling** 00 Watts **ements** 1 in. (.63 cm) 6061T6 aluminum rod **oom** 1 in (1.9 cm) 6061T6 aluminum channel **lounting style** U-bolt: **ximum mast diameter** 1/8in (5.4 cm): **gtai** 4" (35.6 cm) UltraLink

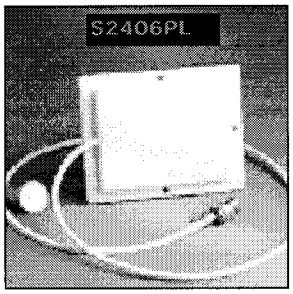
PC2415N	2.4-2.5 GHz	13.9	15	18	30	34	N	0.4 (.04)	125 (200)	100 (161)	26 (66)	<1 (.473)

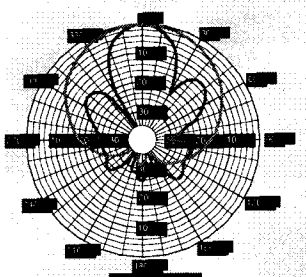
Power handling Watts **diating element** pper **closure material** V stable polycarbonate **ximum mast diameter** 1/8" (5.4 cm) **Pigtail** 2" (30.5 cm) UltraLink

CUSHCRAFT
COMMUNICATIONS ANTENNAS







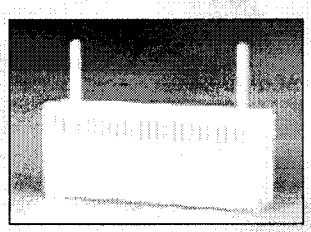


DATA PATCH SELECTOR CHART

Model	Freq. MHz	Gain dBi	VSWR	-3dB bmwidth E-Plane	H-Plane	Dimensions In (cm)	Weight oz (g)	Polarity	Front to Back (dB)
S8246P	824-896	6	2.0:1	56	65	11 X 10 X 7/8 (27.9 X 25.4 X 1.9)	16 (448)	Linear	20
S8248P12NF	824-896	8	1.5:1	65	70	8 x 12 x 1 3/4 (20.3 x 30.5 x 4.4)	27 (770)	Linear	17
S828HVP12NF	824-896	8	1.5:1	65	72	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	37 (1041)	Dual Linear	17
S828SLP12NF	824-896	8	1.5:1	65	72	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	37 (1041)	Dual Slant Linear	17
S888SLP12NF	880-960	8	1.5:1	65	70	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	36 (1018)	Dual Slant Linear	17
S888HVP12NF	880-960	8	1.5:1	65	70	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	36 (1018)	Dual Linear	17
S888P12NF	880-960	8	1.5:1	65	70	8 x 12 x 1 3/4 (20.3 x 30.5 x 4.4)	27 (770)	Linear	17
S9026PL	902-928	6	1.5:1	65	75	11 x 12 x 7/16 (27.9 x 30.5 x 1.1)	22 (616)	Linear	18
S9026PC	902-928	6 dBic	1.5:1	65	75	11 x 12 x 7/16 (27.9 x 30.5 x 1.1)	22 (616)	Circular	18
S9028P12NF	902-928	8	1.5:1	65	70	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	27 (770)	Linear	17
S9028HVP12NF	902-928	8	1.5:1	65	70	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	36 (1018)	Dual Linear	17
S9028SLP12NF	902-928	8	1.5:1	65	70	12 x 12 x 1 3/4 (30.5 x 30.5 x 4.4)	36 (1018)	Dual Slant Linear	17
S9029P	902-928	9	2.0:1	55	60	10 x 11 x 7/8 (25.4 x 27.9 x 2.5)	18 (498)	Linear	17
S9029HVP	902-928	9	2.0:1	55	60	10 x 11 x 7/8 (25.4 x 27.9 x 2.5)	24 (679)	Dual Linear	17
S2406PL	2400-2500	6	1.5:1	65	75	5 x 5 x 7/16 (12.7 x 12.7 1.1)	8 (224)	Linear	18
S2406PC	2400-2500	8 dBic	1.5:1	65	75	5 x 5 x 7/16 (12.7 x 12.7 1.1)	8 (224)	Circular	18
S2407HVP	2400-2500	6.5	1.5:1	65	70	6 x 6 7/8 (15.2 x 15.2 x 2.2)	8 (224)	Dual Linear	18
S2407SLP	2400-2500	6.5	1.5:1	65	70	6 x 6 7/8 (15.2 x 15.2 x 2.2)	8 (224)	Dual Linear	18
S24012P	2400-2500	12	1.5:1	25	65	6 x 12 x 1 1/2 (15.2 x 30.5 x 3.8)	20 (566)	Linear	20
S2401290P	2400-2500	12.5	2.0:1	10	90	3 x 26 x 1 (7.6 x 66 x 2.5)	16 (452)	Linear	20
S57217P	5725-5850	17	1.5:1	24	22	7 x 7 x 1 (17.8 x 17.8 x 2.5)	12 (336)	Linear	25
S5806PL	5725-5850	6	1.5:1	65	75	2.5 x 2.5 x 7/16 (6.35 x 6.35 x 1.1)	4 (112)	Linear	18
S5806PC	5725-5850	6 dBic	1.5:1	65	75	2.5 x 2.5 x 7/16 (6.35 x 6.35 x 1.1)	4 (112)	Circular	18

Common Specifications: Connector Type - N-female; Enclosure material - Thermoplastic

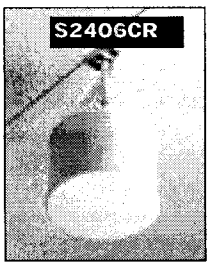
2.4 GHz and 5.7 GHz Omni - ated Sleeve Dipole for Base Stations



The Cushcraft elevated feed sleeve dipole is an excellent antenna for low cost omnidirectional ISM band access point applications and Wireless ISM band PBX base station applications. The antenna comes in a neutral colored, weatherized housing and is suitable for either indoor or outdoor use.

The antenna is available in 2 connector configurations. The first is a threaded base which incorporates a pigtail and subminiature connector. The second configuration is a standard RF connector at the base of the antenna. In both cases the antenna is weather sealed at the base.

These antennas are also available for PCS/DCS band applications. See the Cushcraft PCS/DCS Antennas catalog for part numbers and specifications.



Corner Reflector - 3i Directional Antenna

This antenna is directional but is enclosed in a 6 inch diameter round enclosure. The enclosure itself is an almond color high strength polycarbonate. Corner reflectors are delivered with a gimbal mount which allows them to be pointed toward the appropriate server or node. A variety of mount styles could be used. Commonly, those used in an office environment are supplied with a mount designed to be used with a suspended ceiling.

Model	Freq. MHz	Gain dBi	Bandwidth 1.5:1 MHz	-3dB bmwidth E-Plane	H-Plane	Dimensions In (cm)	Weight oz (kg)	Polarity	Front to Back (dB)
S2406CR	00-2500	6.0	100	50	75	5-3/4x5-3/4x6 (14.6x14.6x16.2)	14 (.396)	Linear	15

Common Specifications: 5 Watts; VSWR - 1.5:1 nominal; Connector Type - N-female; Element material - printed circuit; Enclosure material -Lexan® Plastic; Mount style - ceiling

CUSHCRAFT
COMMUNICATIONS ANTENNAS