

Base Station Antennas

Cellular, PCS, Data, ISM, WLL, are all technologies migrating to completely wireless systems. Optimization of these new wireless systems requires a combination of high performance antennas, for which site or base station antennas are the foundation.

Larsen manufactures a variety of small base and microcell antennas to meet many of today's demanding requirements. Our versatile moderate duty omnis, fiberglass radomes, Yagis, and panels offer the selection and performance to meet your system needs. And, in addition to our standard product offering, Larsen's engineering staff can work with you to design antennas to your exact specifications.

Base station antennas provide the critical link between the user and the system provider. They also provide connectivity within the system without being directly accessed by the user. Base station antennas, as their name implies, are usually fixed in a specific location in the network and provide connectivity over a geographical area or from point-to-point.

Base station antennas can be broken down into two general categories, omni-directional and directional.

BRIEF REVIEW OF OMNI DIRECTIONAL ANTENNAS

Omni-directional antennas have radiation patterns that cover the horizon uniformly. Gain greater than unity is achieved by forming a collinear vertical array, which reduces the elevation beamwidth but leaves the azimuth (horizon) pattern unaffected.

MODERATE DUTY OMNIS

Larsen's moderate-duty omni antenna radiating elements and ground plane radials are constructed using our trademarked Kulrod process at the heart of which is 17-7 heat treated stainless steel. All base station antennas are supplied with mounting hardware to attach to a pole up to 2" in diameter.

BSA SERIES OMNIS

BSA series omni antennas are engineered to provide lasting performance in the most demanding field conditions.

Design features include:

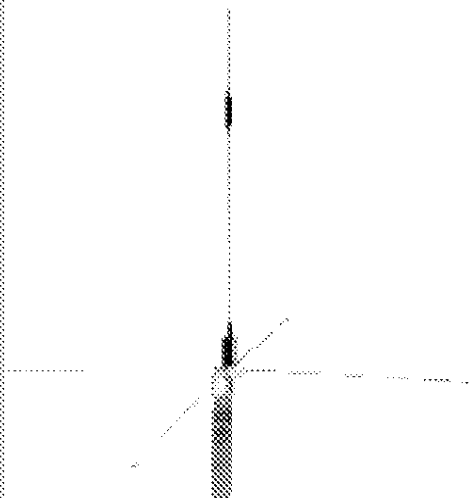
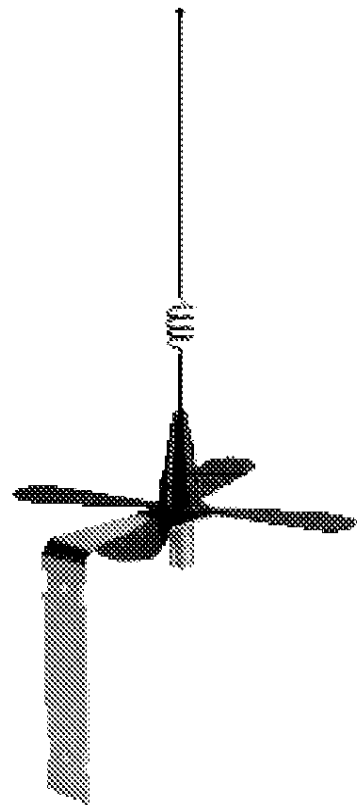
- Heavy, nickel-plated brass square nut radial collar (square nut allows easy removal for extra portability and convenience).
- 150 and 220 models are DC grounded
- Power rating 200W
- Wind load rating 100 mph

FB SERIES OMNIS

FB series omni antennas are designed for optimum performance in extreme weather conditions.

Design features include:

- Compact, easily transportable design
- All-weather construction
- Power rating 200W
- Wind load rating 100 mph



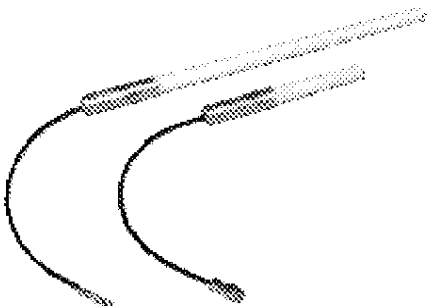
Base Station Antennas

RADOME OMNIS

RO series antennas feature a ground plane independent design, DC grounded and enclosed in a fiberglass radome. The radome protects the radiating element from the weather and reduces the flexing of the whip in a low frequency vibration environment as would be encountered at the top of long mast.

Design features include:

- Ground plane independent
- All-weather construction
- DC grounded
- Power rating 200W
- Wind load rating 100 mph



BRIEF REVIEW OF DIRECTIONAL ANTENNAS

Directional antennas are used in communication systems where gain, higher than can be provided by a reasonable omni (> 7 dBi), is required. Directional antennas are useful for remote locations where high gain is required and the direction to a desired transmitter/receiver is known. They are used in cell and microcell applications to divide a geographical region into sectors. This reduces interference in the network allowing a greater number of users to be serviced.

Antenna gain and directivity are increased by increasing the effective aperture of the antenna. In a Yagi, this means adding more elements, directors, to the antenna. For panel antennas, this means increasing the size of the panel by adding more elements or increasing the spacing between elements.

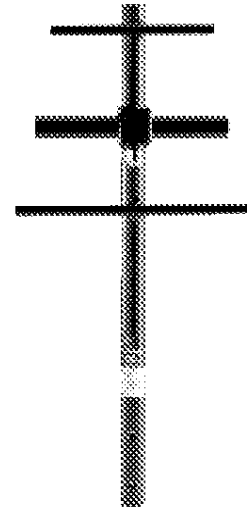
YAGIS

A Yagi (Yagi-Uda) antenna is a parasitic linear array of parallel dipoles. Typical construction uses a single driven dipole with a reflector and director elements excited by near field coupling to the driven element. Yagi's are popular due to their rugged construction and relatively high gain.

YA series Yagi's are built to precise specifications to perform in extreme weather conditions. They are fully welded for high strength and low noise performance.

Design features include:

- Fully welded
- Solid aluminum elements
- Aluminum tube boom
- Power rating 300W
- Wind load rating 100 mph



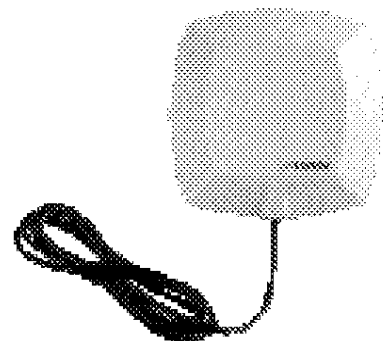
PANELS

Larsen's panel antennas use a variety of microstrip element designs. High gains are achieved by combining several elements together with corporate power dividers. Large arrays use an edge taper to reduce side lobes. Gains up to 18 dBi can be readily achieved.

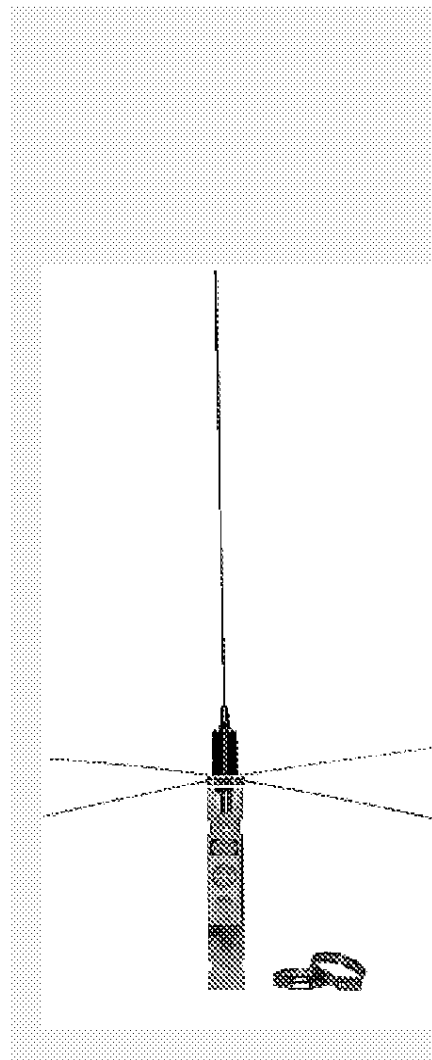
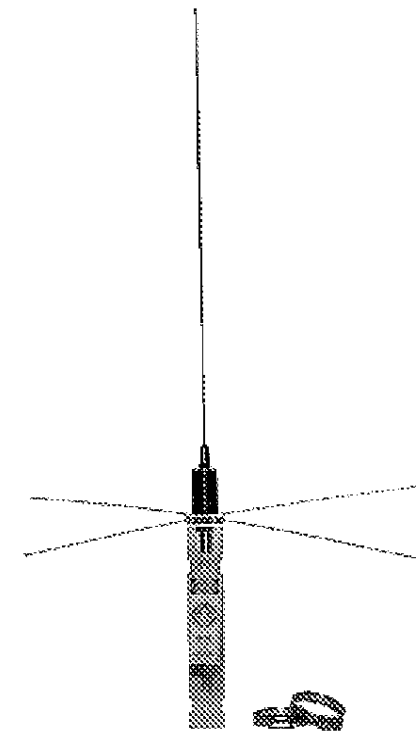
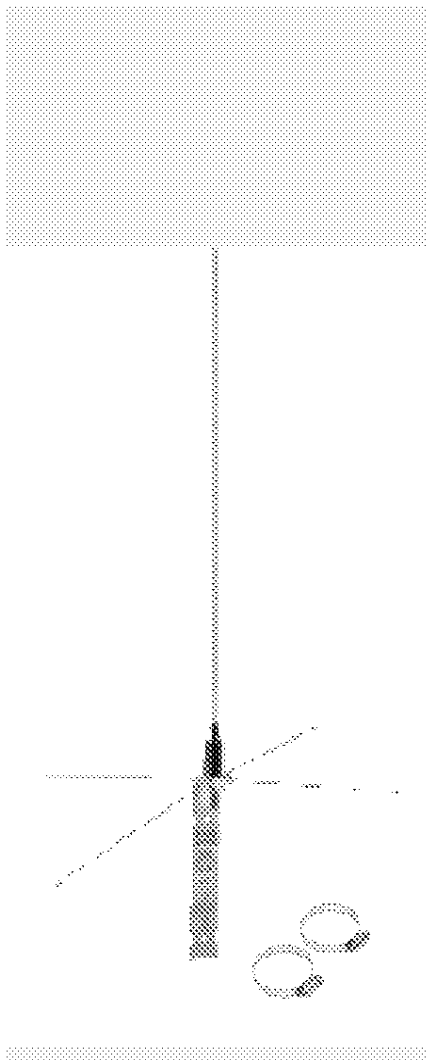
PA series panel antennas are built for PCS, Cellular, Spread Spectrum data and SMR applications. They are microcell pole or building mount directional antennas.

Design features include:

- Indoor and outdoor applications
- Precision cut radiating element



Base Station Antennas

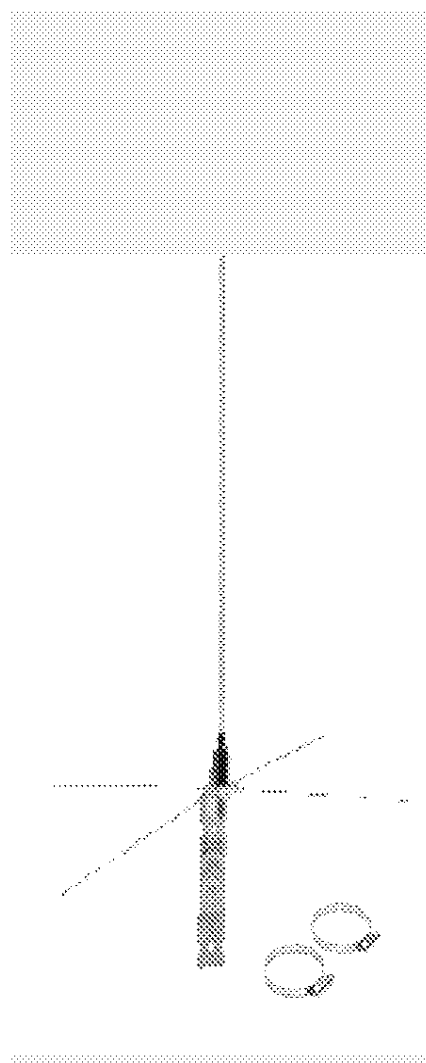
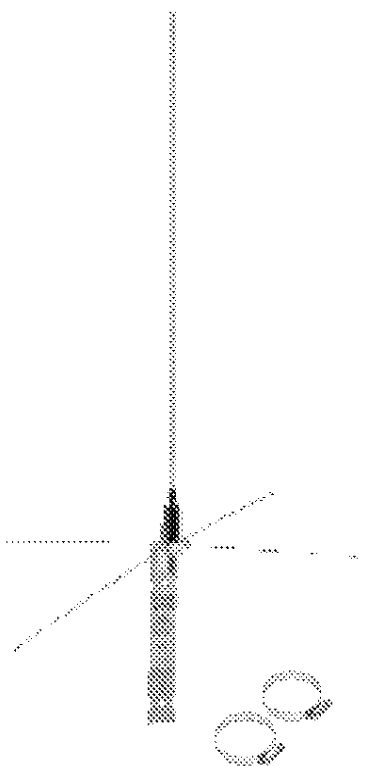
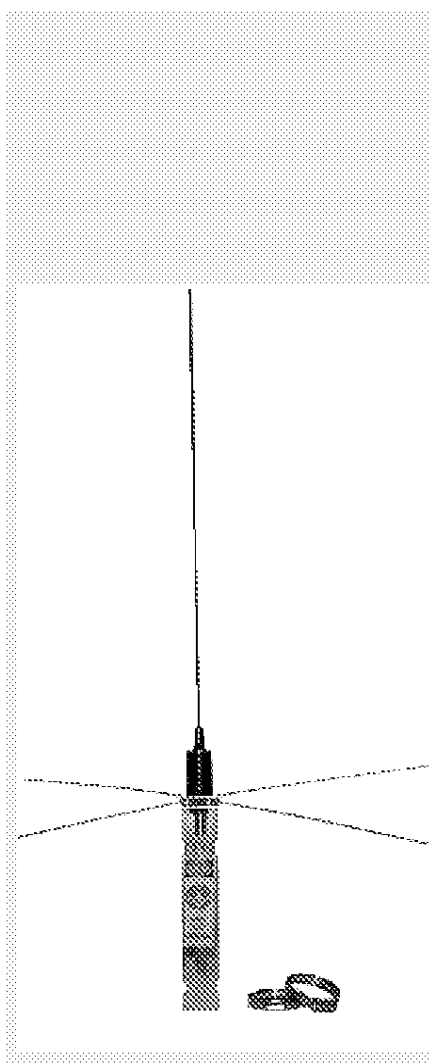


MODEL	FREQUENCY
BSA 40 C	40-50 MHz
SPECIFICATIONS	
GAIN	Unity
TYPE	Loaded 1/4 wave
VSWR	1.5:1 or less
WHIP	Chrome
POWER RATING	200 watts
DIMENSION	51 3/4" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

MODEL	FREQUENCY
118-BSA 118 B	118-121 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 wave
VSWR	1.5:1 or less
WHIP	Black
POWER RATING	200 watts
DIMENSION	51 3/4" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

MODEL	FREQUENCY
BSA 132 B	131-135 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 wave
VSWR	1.5:1 or less
WHIP	Black
POWER RATING	200 watts
DIMENSION	54 1/2" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

Base Station Antennas

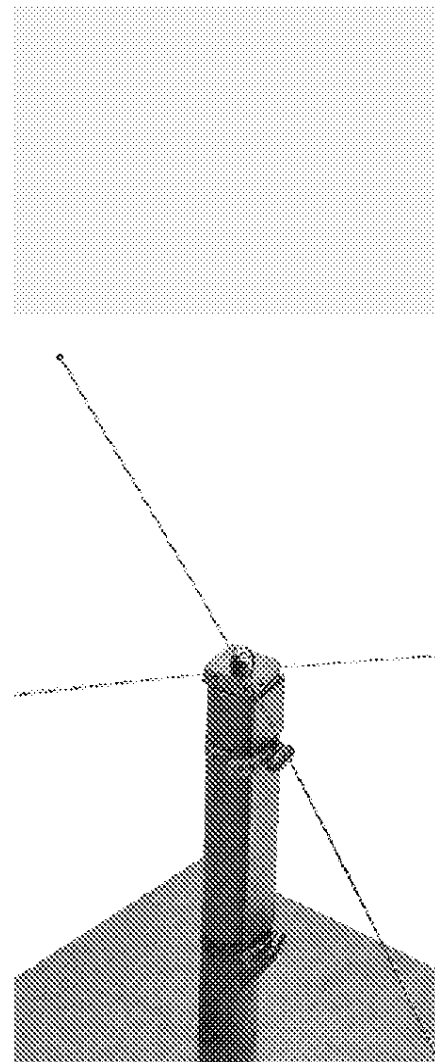
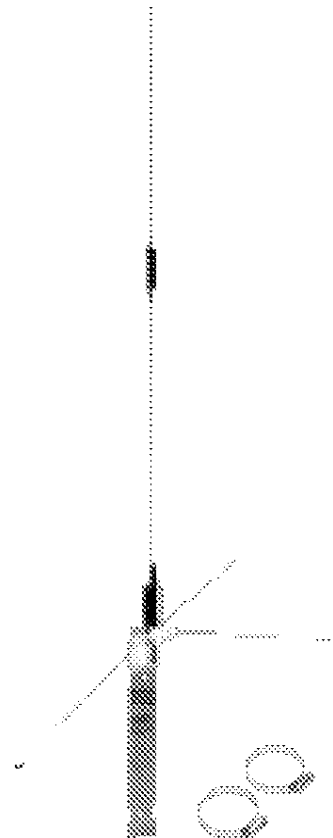
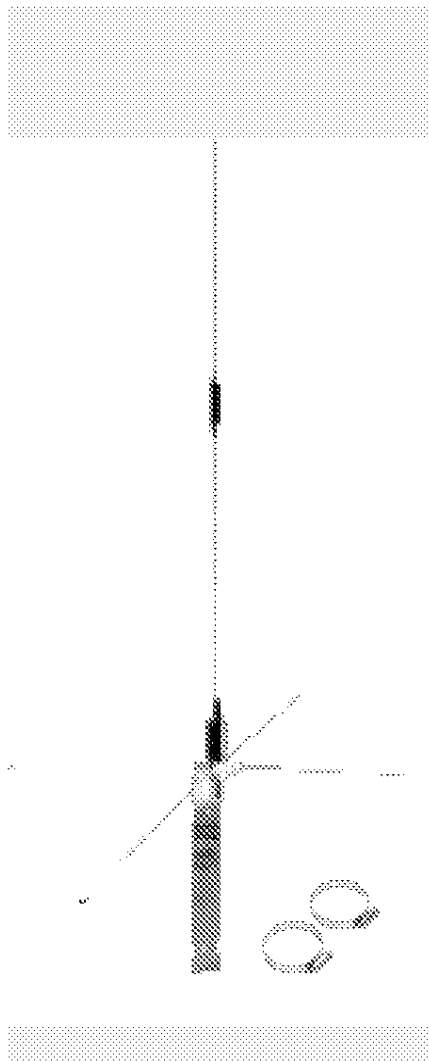


MODEL	FREQUENCY
BSA 150 B	144-174 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 wave
VSWR	1.5:1 or less
WHIP	BLACK
POWER RATING	200 watts
DIMENSION	51 3/4" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

MODEL	FREQUENCY
BSA 150 C	144-174 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 wave
VSWR	1.5:1 or less
WHIP	Chrome
POWER RATING	200 watts
DIMENSION	51 3/4" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

MODEL	FREQUENCY
BSA 220 C	200-225 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 wave
VSWR	1.5:1 or less
WHIP	Chrome
POWER RATING	200 watts
DIMENSION	33 3/4" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

Base Station Antennas

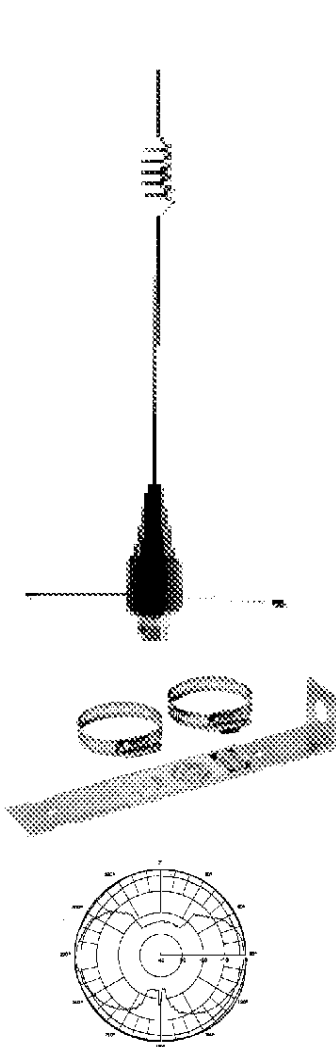
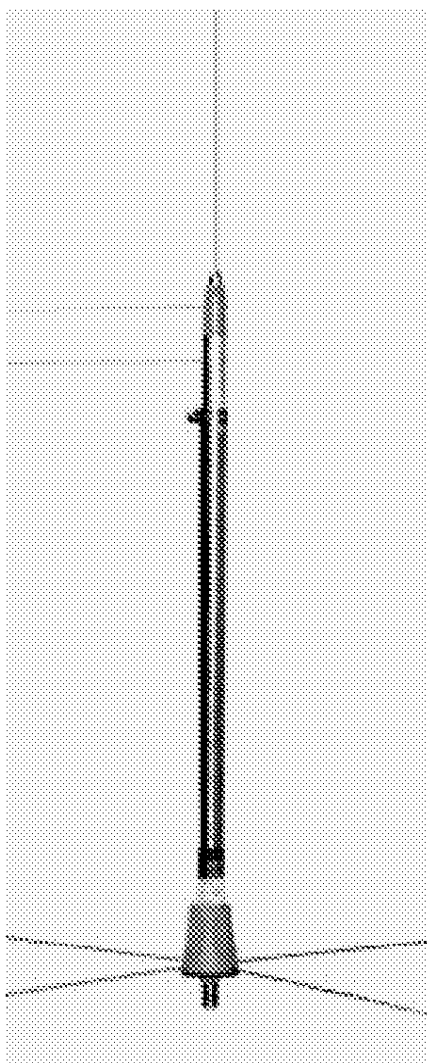


MODEL	FREQUENCY
BSA DC 450	450-470 MHz
SPECIFICATIONS	
GAIN	4.5dB
TYPE	DC ground
VSWR	1.5:1 or less
WHIP	Chrome
POWER RATING	200 watts
DIMENSION	32" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 MPH

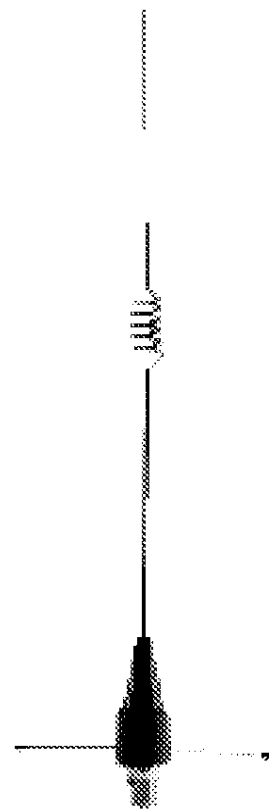
MODEL	FREQUENCY
BSA 406 C	406-420 MHz
BSA 440 C	440-460 MHz
BSA 450 C	450-470 MHz
BSA 470 C	470-490 MHz
BSA 490 C	490-512 MHz
SPECIFICATIONS	
GAIN	4.5dB
TYPE	5/8 over 1/2 wave
VSWR	1.5:1 or less
WHIP	.100 Chrome
POWER RATING	200 watts
DIMENSION	32" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

MODEL	FREQUENCY
BSA KIT	144-512 MHz
SPECIFICATIONS	
TYPE	Base Station Kit
VSWR	1.5:1 or less
WHIP	.070 Chrome
FEED CONNECTION	UHF
FEMALE	

Base Station Antennas



Frequency: 806 MHz
Polarization: (E & H plane)



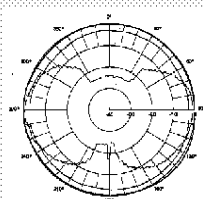
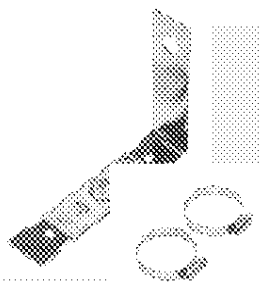
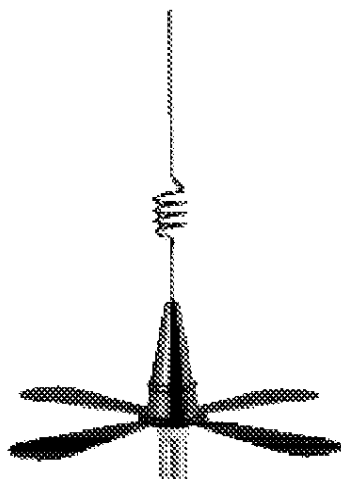
Frequency: 806 MHz
Polarization: (E & H plane)

MODEL	FREQUENCY
FB1 136	136-230 MHz
SPECIFICATIONS	
GAIN	3.6dB
TYPE	5/8 over 1/2 wave
VSWR	1.5:1 or less
POWER RATING	200 watts
DIMENSION	96" H
FEED CONNECTION	UHF
FEMALE	
WINDLOAD	100 mph

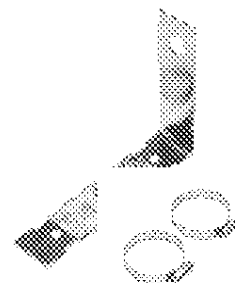
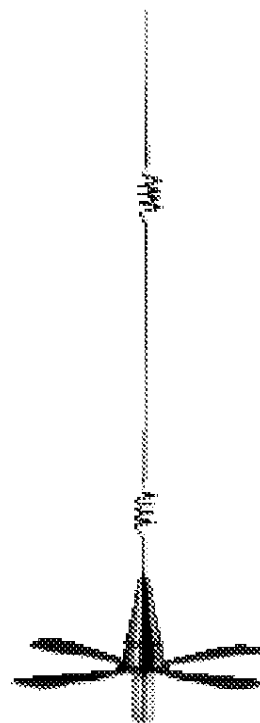
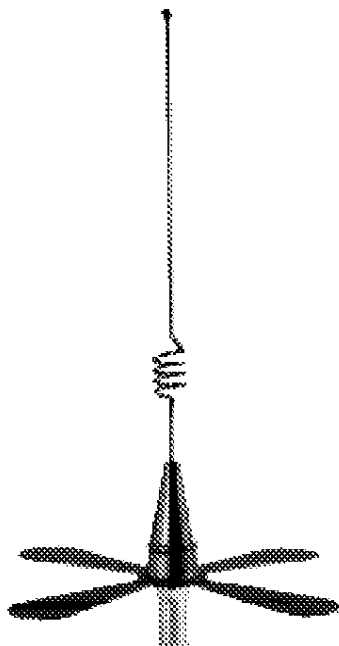
MODEL	FREQUENCY
FB2 406	406-420 MHz
FB2 440	440-460 MHz
FB2 450	450-470 MHz
FB2 470	470-490 MHz
FB2 490	490-512 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.100, open coil
POWER RATING	200watts
DIMENSION	32 1/4" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

MODEL	FREQUENCY
FB2 406 W/A	406-420 MHz
FB2 420 W/A	420-440 MHz
FB2 440 W/A	440-460 MHz
FB2 450 W/A	450-470 MHz
FB2 470 W/A	470-490 MHz
FB2 490 W/A	490-512 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.100, open coil
POWER RATING	200 watts
DIMENSION	32 1/4" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

Base Station Antennas



Frequency: 806 MHz
Polarization: (E & H plane)

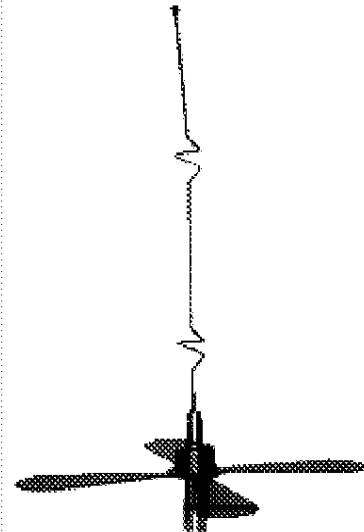
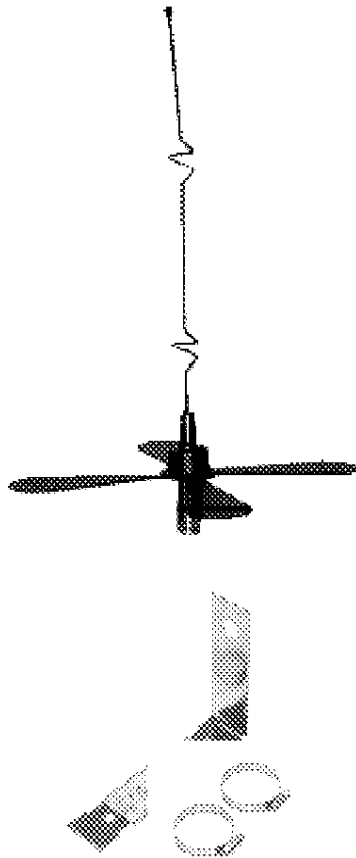
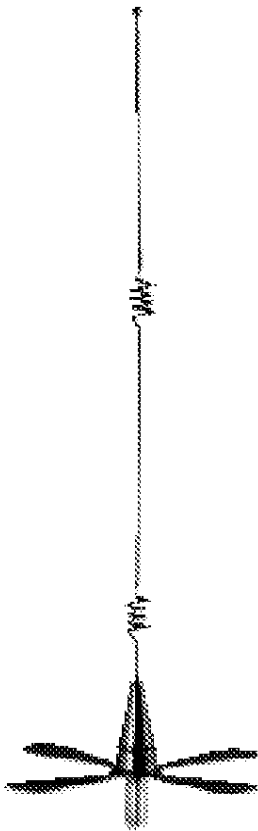


MODEL	FREQUENCY
FB3 825	824-896 MHz 5" AFM MT
BKKT INCL	
FB3 900	890-960 MHz 5" AFM MT
BKKT INCL	
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	100, open coil
POWER RATING	150 watts
DIMENSION	16" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

MODEL	FREQUENCY
FB3800 WA	806-866 MHz
FB3825 WA	824-896 MHz
FB3900WA	890-960 MHz
SPECIFICATIONS	
GAIN	3dB
TYPE	5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	100, open coil
POWER RATING	150 watts
DIMENSION	16" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

MODEL	FREQUENCY
FB35T 800	806-866 MHz 5"
AFM MT BKKT INCL	
FB35T 825	824-896 MHz 5"
AFM MT BKKT INCL	
FB35T 900	902-928 MHz 5"
AFM MT BKKT INCL	
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	100, twin open coil
POWER RATING	150 watts
DIMENSION	32" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

Base Station Antennas

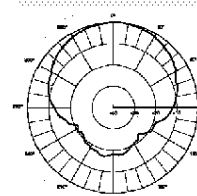
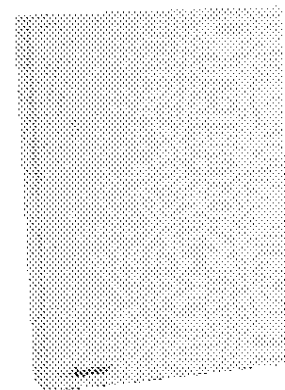
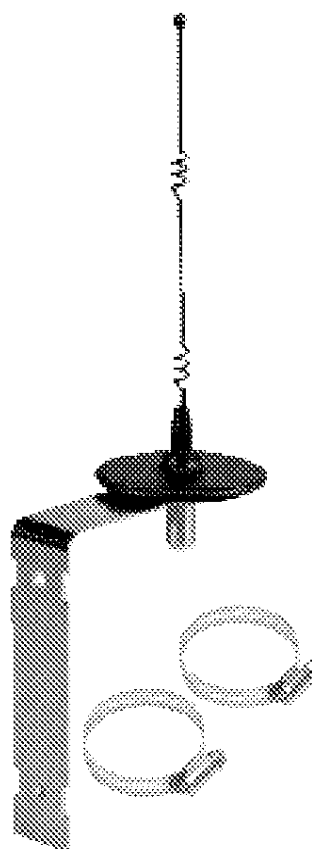
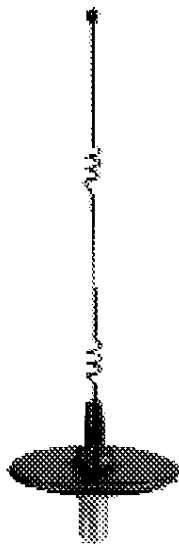


MODEL	FREQUENCY
FB35T800WA	806-866 MHz
FB35T825WA	824-896 MHz
FB25T900WA	902-928 MHz
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.100, twin open coil
POWER RATING	150 watts
DIMENSION	23" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

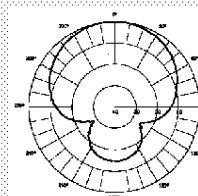
MODEL	FREQUENCY
FB35T1850	1850-1990 MHz 5"
AFIM MT BRKT INCL	
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.100, twin open coil
POWER RATING	100 watts
FEED CONNECTION	N FEMALE
DIMENSION	13 1/2"
WINDLOAD	100 mph

MODEL	FREQUENCY
FB35T1850WA	1850-1990 MHz
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.100, twin open coil
POWER RATING	100 watts
FEED CONNECTION	N FEMALE
DIMENSION	13 1/2"
WINDLOAD	100 mph

Base Station Antennas



Frequency: 900 MHz
Polarization: Horizontal



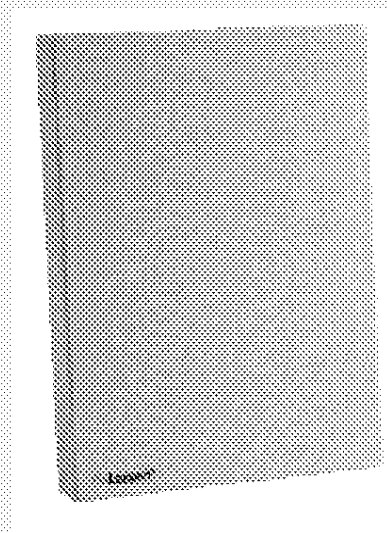
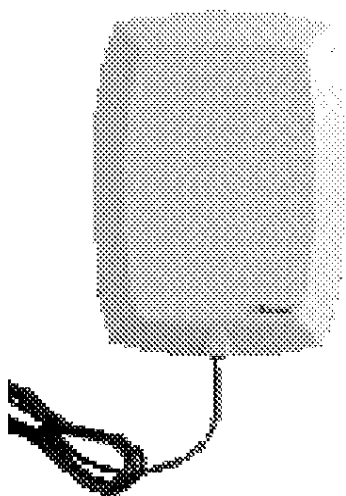
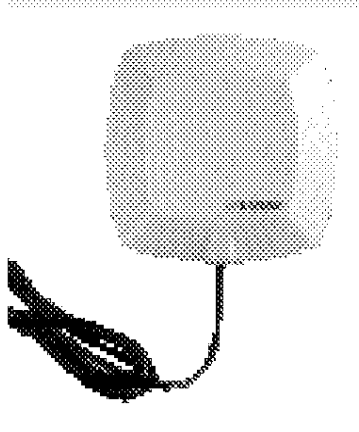
Frequency: 800 MHz
Polarization: Horizontal

MODEL	FREQUENCY
FB42400WA	2400-2485 MHz
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.070, twin open coil
POWER RATING	100 watts
DIMENSION	8" H
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

MODEL	FREQUENCY
FB42400	2400-2485 MHz 5"
AFIM MT BKKT INCL	
SPECIFICATIONS	
GAIN	5dB
TYPE	5/8 over 5/8 over 1/4 wave
VSWR	1.5:1 or less
COLOR	Black
WHIP	.070, twin open coil
POWER RATING	100 watts
FEED CONNECTION	N FEMALE
WINDLOAD	100 mph

MODEL	FREQUENCY
PA18806N	806-866 MHz N CONN
PA18824N	824-896 MHz N CONN
PA18902N	890-960 MHz N CONN
SPECIFICATIONS	
TYPE	Single element panel
GAIN	8dBi
VSWR	1.5:1 or less Tx
H PLANE	60 min.
E PLANE	60 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi nominal
AMBIENT TEMP	40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	9.4L/ 6.75"W/ 1.10"D

Base Station Antennas

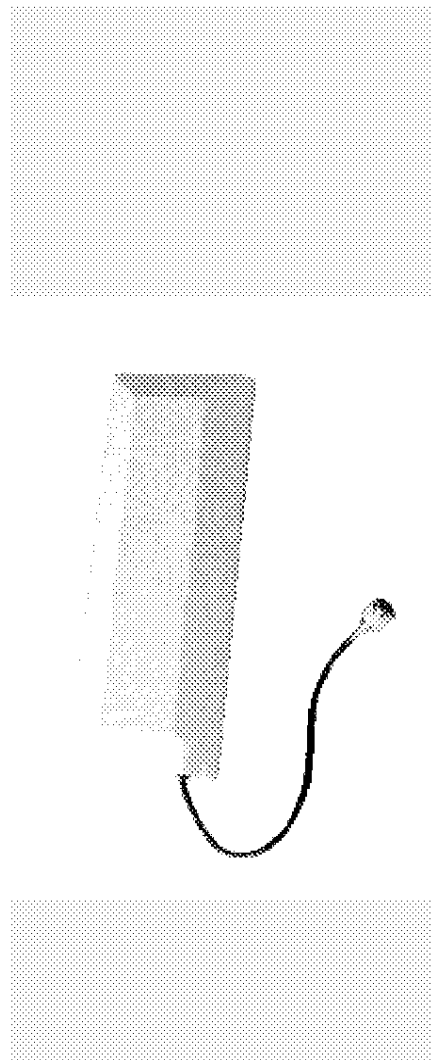
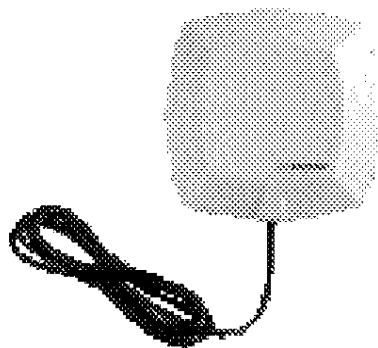
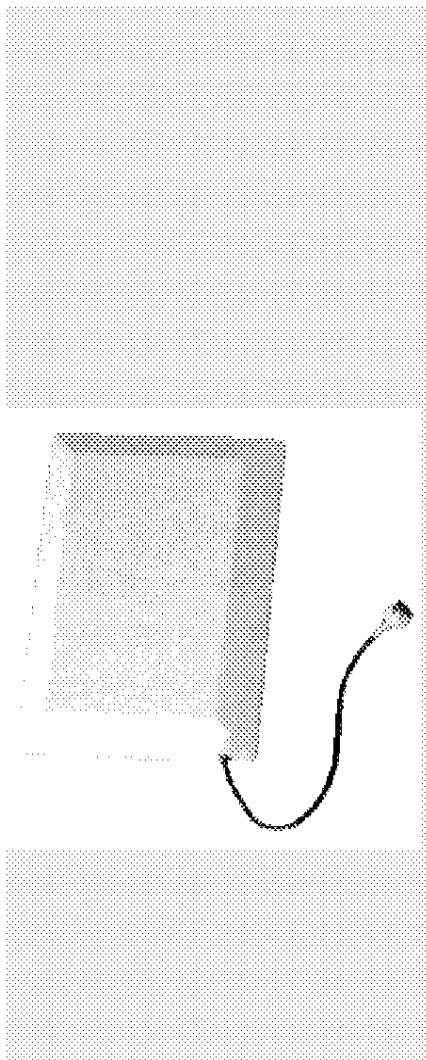


MODEL	FREQUENCY
PA181850N	1850-1990 MHz N
CONN	
SPECIFICATIONS	
TYPE	Single element panel
GAIN	8dBi
VSWR	1.5:1 or less Tx
H PLANE	60 min.
E PLANE	60 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi
nominal	
AMBIENT TEMP	-40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	5.7"L/ 5.7"W/ 1"D

MODEL	FREQUENCY	CONNECTOR
PA2101850N	1850-1990 MHz	N
CONN		
SPECIFICATIONS		
TYPE	Dual element panel	
GAIN	10dBi	
VSWR	1.5:1 or less Tx	
H PLANE	60 min.	
E PLANE	60 min.	
IMPEDANCE	50 ohms	
POLARIZATION	Vertical	
FRONT TO BACK RATIO	20dBi	
nominal		
AMBIENT TEMP	-40 to 120F	
LIFE EXPECTANCY	20 years	
DIMENSION	10.4L/ 7.7"W/ 1"D	
COAX	3' RG58/U Dual Shield	

MODEL	FREQUENCY
PA4142400N	2400-2485 MHz N
CONN	
SPECIFICATIONS	
TYPE	Quad element panel
GAIN	14dBi
VSWR	1.5:1 or less Tx
H PLANE	30 min.
E PLANE	30 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi
nominal	
AMBIENT TEMP	-40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	9.4L/ 8.5"W/ .75"D
COAX	3' RG58/U Dual Shield

Base Station Antennas

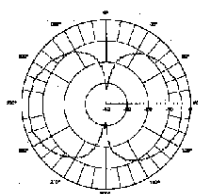
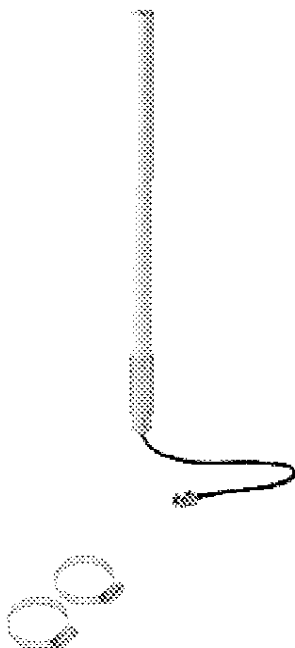
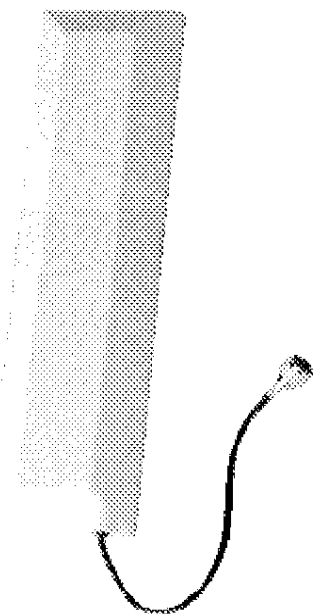


MODEL	FREQUENCY
PA16182400N	2400-2485 MHz N
CONN	
SPECIFICATIONS	
TYPE	Sixteen element panel
GAIN	18dBi
VSWR	1.5:1 or less Tx
H PLANE	15 min.
E PLANE	15 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi
nominal	
AMBIENT TEMP	-40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	17"L/16.5"W/1"D
COAX	3' RG58/U Dual Shield

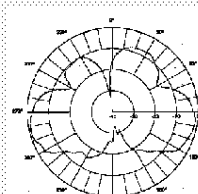
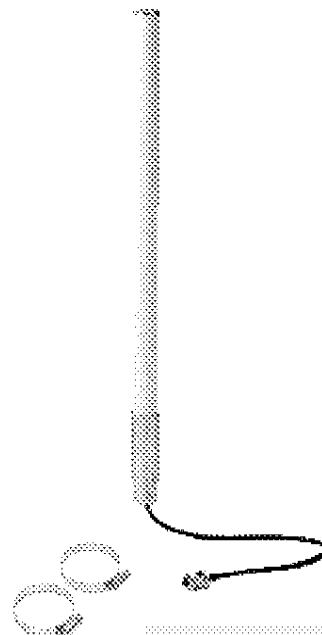
MODEL	FREQUENCY
PA172400N	2400-2485 MHz N
CONN	
SPECIFICATIONS	
TYPE	Single element panel
GAIN	7dBi
VSWR	1.5:1 or less Tx
H PLANE	70 min.
E PLANE	70 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi
nominal	
AMBIENT TEMP	-40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	4"L/4"W/1"D
COAX	3' RG58/U Dual Shield

MODEL	FREQUENCY
PA3112400N	2400-2485 MHz N
CONN	
SPECIFICATIONS	
TYPE	Three element panel
GAIN	11dBi
VSWR	1.5:1 or less Tx
H PLANE	70 min.
E PLANE	35 min.
IMPEDANCE	50 ohms
POLARIZATION	Vertical
FRONT TO BACK RATIO	20dBi
nominal	
AMBIENT TEMP	-40 to 120F
LIFE EXPECTANCY	20 years
DIMENSION	12"L/4"W/1.5"D
COAX	3' RG58/U Dual Shield

Base Station Antennas



Frequency: 810 MHz
Polarization: Hor (E) Plane



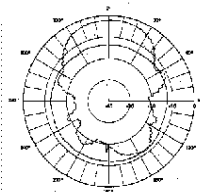
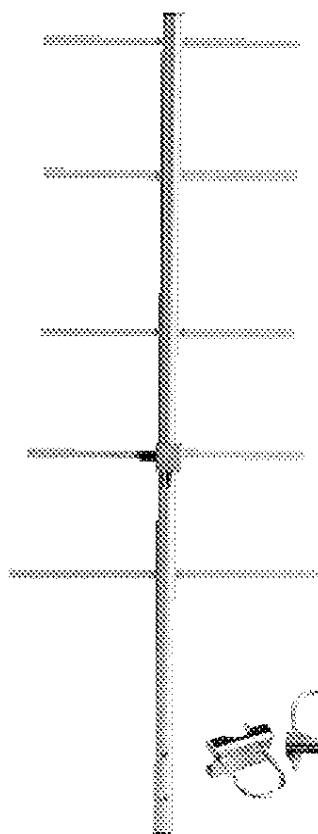
Frequency: 825 MHz
Polarization: Hor (E) Plane

MODEL	FREQUENCY	
PA6152400N	2400-2485 MHz	N
CONN		
SPECIFICATIONS		
TYPE	Six element panel	
GAIN	15dBi	
VSWR	1.5:1 or less Tx	
H PLANE	70 min.	
E PLANE	15 min.	
IMPEDANCE	50 ohms	
POLARIZATION	Vertical	
FRONT TO BACK RATIO	20dBi	
nominal		
AMBIENT TEMP	-40 to 120F	
LIFE EXPECTANCY	20	
years		
DIMENSION	28" L / 5" W / 1.5" D	
COAX	3' RG58/U Dual Shield	

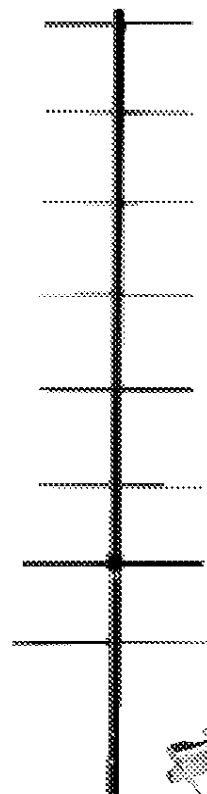
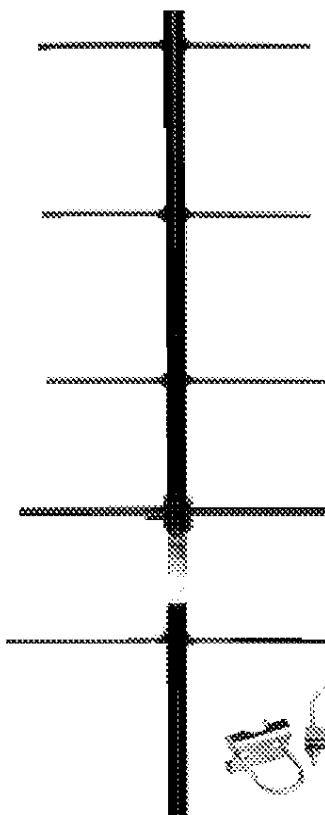
MODEL	FREQUENCY	CONNECTOR
ROU806NF	806-866 MHz	N
Female		
ROU806NM	806-866 MHz	N
Male		
ROU806NF	824-896 MHz	N
Female		
ROU825NM	824-896 MHz	N
Male		
ROU900NF	890-960 MHz	N
Female		
ROU900NM	890-960 MHz	N
Male		
SPECIFICATIONS		
GAIN	2dBi	
VSWR	1.5:1 or less	
VERT BEAMWIDTH@ 1/2 POWER	60	
LIGHTENING PROTECTION	DC Ground	
MAX POWER	150 watts	

MODEL	FREQUENCY	
RO3806NF	806-866 MHz	N
Female		
RO3806NM	806-866 MHz	N
Male		
RO3825NF	824-896 MHz	N
Female		
RO3825NM	824-896 MHz	N
Male		
RO3900NF	890-960 MHz	N
Female		
RO3900NM	890-960 MHz	N
Male		
SPECIFICATIONS		
GAIN	3 dB (5dBi)	
VSWR	1.5:1 or less	
VERT BEAMWIDTH@ 1/2 POWER	40	
LIGHTENING PROTECTION	DC Ground	

Base Station Antennas



Frequency: 825 MHz
Polarization: Vertical

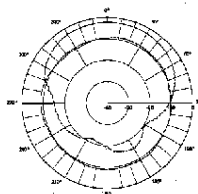
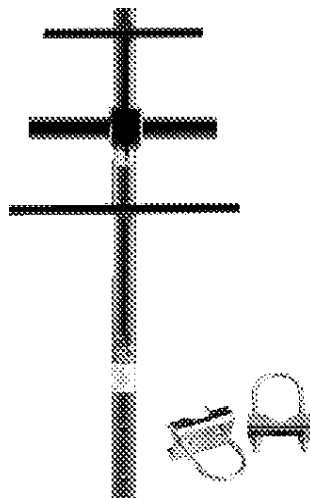
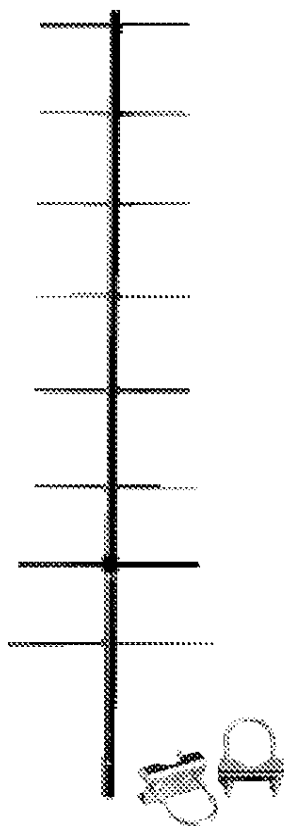


MODEL	FREQUENCY	CONNECTOR
YA3 406 N	406-440 MHz	N
Female		
YA3 450 N	440-470 MHz	N
Female		
YA3 470 N	470-512 MHz	N
Female		
YA3 406 PL	406-440 MHz	
SO-239		
YA3 450 PL	440-470 MHz	
SO-239		
YA3 470 PL	470-512 MHz	
SO-239		
SPECIFICATIONS		
GAIN	10dB/ 12dBi	
TYPE	5 Element staked	
VSWR	1.5:1 or less	
CONNECTOR	N upper and lower	
POWER RATING	300 watts	

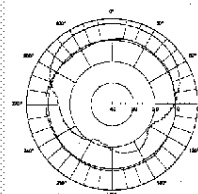
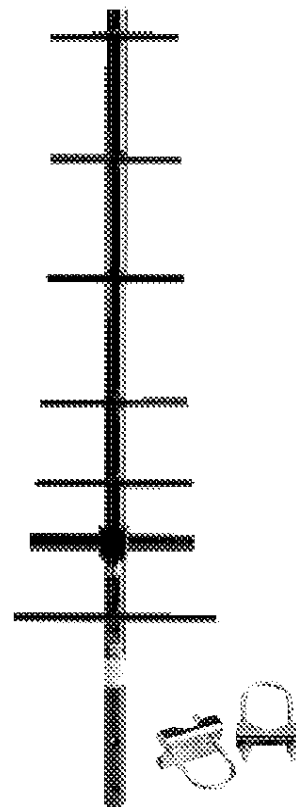
MODEL	FREQUENCY	CONNECTOR
YA3 406 W N	406-440 MHz	N
Female		
YA3 450 W N	440-470 MHz	N
Female		
YA3 470 W N	470-512 MHz	N
Female		
YA3 406 W PL	406-440 MHz	
SO-239		
YA3 450 W PL	440-470 MHz	
SO-239		
YA3 470 W PL	470-512 MHz	
SO-239		
SPECIFICATIONS		
GAIN	10dB/ 12dBi	
TYPE	5 Element welded	
VSWR	1.5:1 or less	
CONNECTOR	N upper and lower	
POWER RATING	300 watts	

MODEL	FREQUENCY
YA1 406 N	406-420 MHz
YA1 420 N	420-440 MHz
YA1 440 N	440-460 MHz
YA1 450 N	450-470 MHz
YA1 470 N	470-490 MHz
YA1 490 N	490-512 MHz
SPECIFICATIONS	
GAIN	11dB/ 13dBi
TYPE	8 Element welded
VSWR	1.5:1 or less
CONNECTOR	N female
POWER RATING	300
DIMENSION	57 1/4" H
FEED CONNECTION	UHF OR N
FEMALE	
BEAM WIDTH	HORIZ 42° VERT 50°
WINDLOAD	100 mph

Base Station Antennas



Frequency: 825 MHz
Polarization: Vertical



Frequency: 825 MHz
Polarization: Vertical

MODEL	FREQUENCY	CONNECTOR
YA1 406 PL	406-420 MHz	
SO-239		
YA1 420 PL	420-440 MHz	
SO-239		
YA1 440 PL	440-460 MHz	
SO-239		
YA1 450 PL	450-470 MHz	
SO-239		
YA1 470 PL	470-490 MHz	
SO-239		
YA1 490 PL	490-512 MHz	
SO-239		
SPECIFICATIONS		
GAIN	11dB/ 13dBi	
TYPE	8 Element welded	
VSWR	1.5:1 or less	
CONNECTOR	N FEMALE CONN	
POWER RATING	300	

MODEL	FREQUENCY
YA6 800	806-896 MHz
YA6 900	890-960 MHz
SPECIFICATIONS	
GAIN	6dB/ 8dBi
TYPE	3 Element welded
VSWR	1.5:1 or less
POWER RATING	300 watts
DIMENSION	17" h x 8" w
FEED CONNECTION	N FEMALE
BEAM WIDTH	HOR 50/ VERT. 45
WINDLOAD	100 mph

MODEL	FREQUENCY	CONNECTOR
YA5 800	806-896 MHz	N
Female		
YA5 900	890-960 MHz	N
Female		
SPECIFICATIONS		
GAIN	10dB/ 12dBi	
TYPE	7 Element welded	
VSWR	1.5:1 or less	
POWER RATING	300 watts	
DIMENSION	31" h x 8" w	
FEED CONNECTION	N FEMALE	
BEAM WIDTH	HOR 45/ VERT. 55	
WINDLOAD	100 mph	