



EXTREMELY BROADBAND

2A

OMNIS

A) VERTICALLY POLARIZED, RECEIVE ONLY

Our **SAS series** antennas are ideally suited for spectrum surveillance and spectrum management applications. These are extremely broadband, portable receive antennas designed specifically for accurate measurement of the vertical electric field intensity. Integral active networks provide outstanding performance over the entire frequency range of operation. This is performance normally associated with full-scale antennas many times larger. All **SAS series** antennas except for **SAS-2** alpha antennas are supplied with protective radomes for outdoor use.

SAS-2 and **SAS-2/SE** antennas are designed for use in environmentally controlled chambers or test laboratories. The **SAS-2 series** antennas have an integrated, rechargeable power supply for stand-alone operation.

A gradual roll-off in the response below 10 kHz in **SAS** antennas prevents overload due to strong 60 Hz harmonics, in areas where man-made noise is a problem. Some **SAS** antennas can be modified for significantly larger overload protection when used in a high field environment (see available options for **SAS-220**).

SAS-230 series antennas covering 20 MHz to 3 GHz are available with high and low band preamplifiers which maybe bypassed remotely by integrated low loss coax switches. See separate datasheet for more details related to various options available for the **SAS-230** antenna.

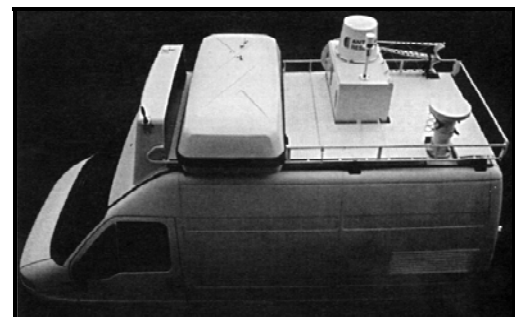
Remote and rack-mountable power supplies are also available for use with **SAS** antennas. These antennas can be modified for use with auto batteries for vehicle mounted applications.



SAS-11/E



SAS-220 ON A VEHICLE



SAS-220/CR in a mobile
Spectrum Management System

SPECIFICATIONS:

	Output Ports	Frequency	Connector	Radome	Power Supply	Size (H x D)	Weight (lbs/kg)
SAS-11/E	2	100 Hz- 200MHz 30 MHz -1 GHz	BNC female	Yes	Remote**	27" x 28"	35 / 16
SAS-11/E-1	1	100 Hz - 1 GHz	BNC female	Yes	Remote**	27" x 28"	35 / 16
SAS-2/S	1	100 Hz - 1 GHz	BNC female	No	Internal Recharge	35" x 19"	10 / 4.5
SAS-2/SE	2	100 Hz - 2 GHz	BNC female	No	Internal Recharge	35" x 19"	10 / 4.5
SAS-210/CR	1	20 MHz - 1 GHz	N female	Yes	Remote***	17" x 19"	15 / 7
SAS-220/CR****	1	20 MHz - 2 GHz	N female	Yes	Remote***	17" x 19"	15 / 7
SAS-230*	1 or 2*	20 - 3000 MHz	See a separate datasheet				
SAS-2300	2	20 - 1000 MHz 800 - 3000 MHz	N female	Yes	Remote***	17" x 19"	22 / 10
Active/Receive only							

* See a separate datasheet for various options for SAS-230 series antennas

** Order a PSD-12 power supply for SAS-11

*** Order a PSD-12 for SAS-210, SAS-220 and SAS-2300 antennas

Pattern:	Omnidirectional
Impedance:	50 Ohms
Permissible Wind:	120 mph
Overload:	0.5 V/m
Temperature:	0°C to + 40°C
Non Operating	0°C to + 55°C



PSD-12

OPTIONS:

- A) Tripods, Masts, Multicouplers
- B) 12VDC Remote Power Supply: Specify Input Power Supply Voltage for the Remote Power Supply: 115 VAC (standard), 15 VDC, 24VDC, 27VDC or 230VAC
- C) 12VDC Rack Mountable Power Supply: Specify Input Power Supply Voltage for the Rack Mountable Power Supply: 115 VAC (standard), 15 VDC, 24VDC, 27VDC or 230VAC

**** D) Overload protection of 100 V/m below 100 MHz and 70 V/m above 100 MHz

B) VERTICALLY POLARIZED OMNIS

The **SAS-230** series antennas are our extremely broadband (from 20 MHz to beyond 3 GHz) omni-directional antennas. A complete passive version of the **SAS-230** antenna is ideally suited for extremely broadband transmit and receive applications. In the transmit mode, they can be utilized to generate large fields (EIRP) for signal jamming, EMC susceptibility testing and other tactical applications. In the receive mode, they can be used for field measurement, spectrum surveillance and spectrum management in the presence of high fields.



SAS-230/20

Three different models of passive **SAS-230** antennas are supplied with protective radomes.

1) Model **SAS-230/20** has two connectors; one for low band (20-1000 MHz) and the other one for the high band (800-3000 MHz).

2) Model **SAS-230/10** is similar to **SAS-230/20** but with a single connector to cover the complete 20 to 3000 MHz band.

3) Model **SAS-230/HP** is a ruggedized antenna for use in mobile and military environments. It can handle a significantly larger amount of RF power (in excess of 300W CW over the frequency band, 20 to 1000 MHz). **SAS-230/HP** is supplied in military OD green color.



SAS-230/HP

Specify the color of the Radome when ordering.
Standard Radome colors are White, Tan, and OD Green.

SPECIFICATIONS:

Mounting: Each **SAS-230** is supplied with the following:

- 1) Flat bottom with eight .272 through holes in a 17.75" dia. circle.
- 2) Centered flange for mounting on a pipe with a 1.5" NPT.
- 3) Centered flange for mounting on a 1.5" tube/tripod.



Overall dimensions with radome and flat bottom (ref) : 17-1/4" height X 18-1/2" dia

Overall dimensions with radome, flat Bottom and removable flange for mounting (standard): 19-5/8" height X 18-1/2" dia

Weight: 22 Lbs (10 Kgs) with all options

Environmental:

WIND: Operable in winds up to 120 mph

ICE: During Normal operation, withstands ice accumulations up to 13mm.

TEMPERATURE: Operating: - 32°C to +55°C

Non Operating: - 32°C to +71° C

SAS-230HP meets or exceeds requirements of US Navy specification 97009A0571.

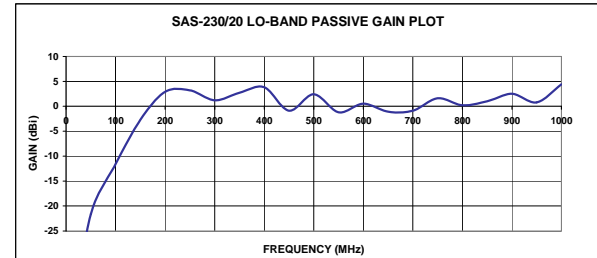
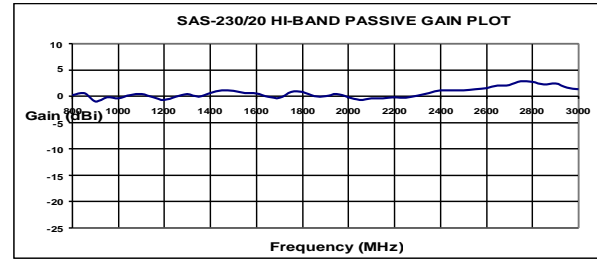
OPTIONS:

Tripods,
Pneumatic Masts,

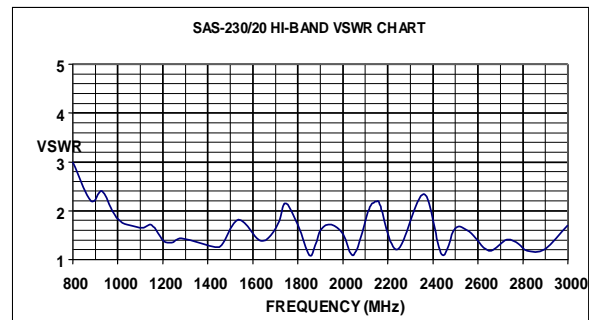
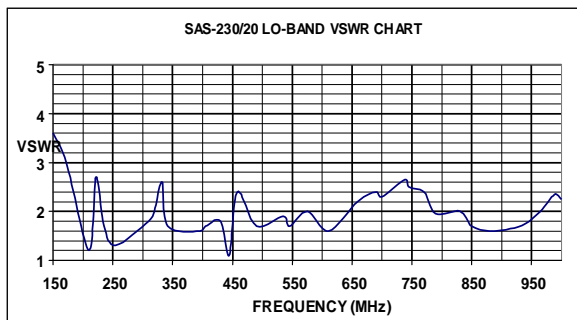
SPECIFICATIONS: SAS-230/20 OR SAS-230/HP

Polarization: Vertical
Rad Pattern: Omnidirectional
Impedance: 50 Ohm
RF connectors: Type N Female

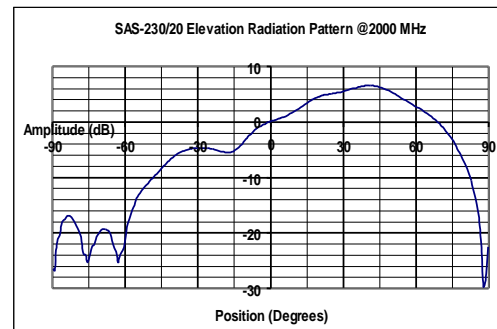
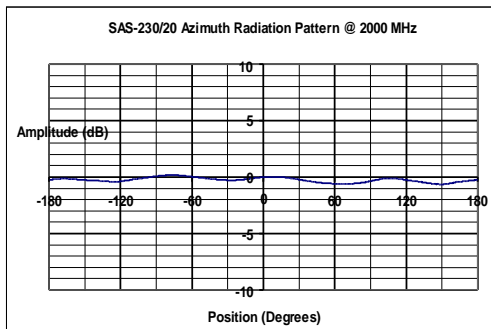
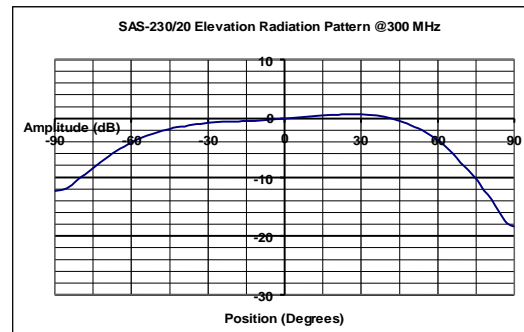
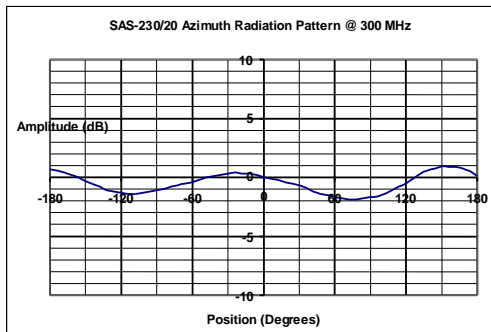
GAIN:



VSWR DATA:



RADIATION PATTERN DATA:



SAS – 230

The **SAS-230** series antennas are our extremely broadband (from 20 MHz to beyond 3 GHz) omni-directional antennas, ideally suited for spectrum surveillance and spectrum management applications. All **SAS-230** antennas are supplied with protective radomes. A gasket is used to environmentally seal the radome to the base plate.

The more ruggedized **SAS-230HV series** antennas provide similar electrical or RF performance but these antennas are designed for use in harsh environments.

Each antenna unit is supplied with all RF and power connections accessible from the bottom of a **SAS-230** antenna. The standard power/control connector is a 10-pin MS connector that carries all DC voltages and control lines required to operate the unit.



SAS-230/ "a" "b" "d"

SAS-230s and SAS-230HVs are available in single band configurations or with two outputs (a low band covering 20 MHz to 1.0 GHz and a High band covering 800 MHz to 3 GHz). These antennas are available with high and/or low band preamplifiers which may be bypassed remotely by integrated low-loss coax switches. Several models are available with Failsafe switches to bypass active circuit and Limiters to protect the amplifiers for use in high field environments.

Select a **SAS-230 "a" "b" "d"** or **SAS-230HV "a" "b" "d"** model for your application where,

a = "1" for Single output. These models have additional insertion loss of 1.5 dB max relative to models with 2 output ports.

a = "2" for Dual outputs (low band covering 20 MHz to 1.0 GHz and High band covering 800 MHz to 3 GHz).

b = "1" for active low band (from 20 MHz to 1 GHz) and passive high band (from 0.8 GHz up to 3 GHz minimum).

NOTE: Add "FS" for a FAILSAFE switch for preamplifier BYPASS capability.

b = "2" for active low band (from 20 MHz to 1 GHz) and active high band (from 0.8 GHz up to 3 GHz minimum).

NOTE: Add "FS" for Two FAILSAFE switches for preamplifier BYPASS capability.

d =L1 for overload protection in one active band

d= L2 for overload protection in both active bands

**Specify the color of the Radome when ordering.
Standard Radome colors are White, OD Green and Desert Tan.**

SPECIFICATIONS:

Electrical:

Polarization : Vertical
Pattern: Omnidirectional
Impedance: 50 Ohm
VSWR: 2:1 Typical when active
Power Requirements:
 12 VDC for PreAmplifiers
 5 VDC for switch(es)
Connectors: RF: Type N Female
Control: MS 10 Pin

LOW BAND:

Sensitivity: 22.7 dB μ V/m
Overload: 18.2 dBV/m

HIGH BAND:

Sensitivity: 22.4 dB μ V/m
Overload: 9.2 dBV/m

Mounting: Each SAS-230 is supplied with the following:

- 1) Flat bottom with eight .272 through holes in a 17.75" dia. Circle.
- 2) Centered flange for mounting on a pipe with a 1.5" NPT.
- 3) Centered flange for mounting on a 1.5" tube/tripod.

Overall dimensions with radome and flat Bottom (ref): 17-1/4" height x 18-1/2" dia

Overall dimensions with radome, flat Bottom and removable flange for mounting (standard):

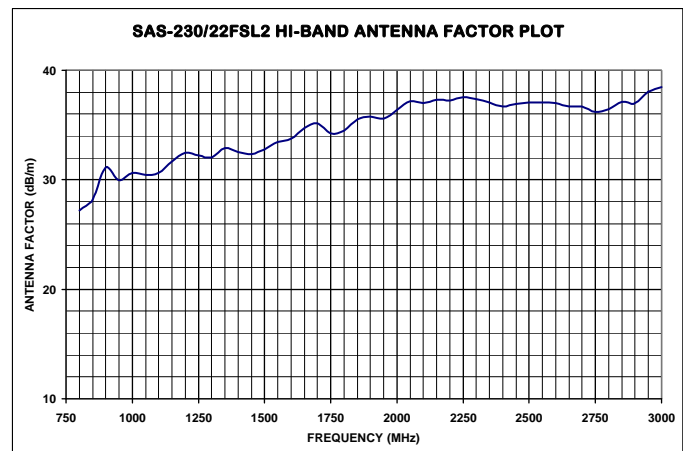
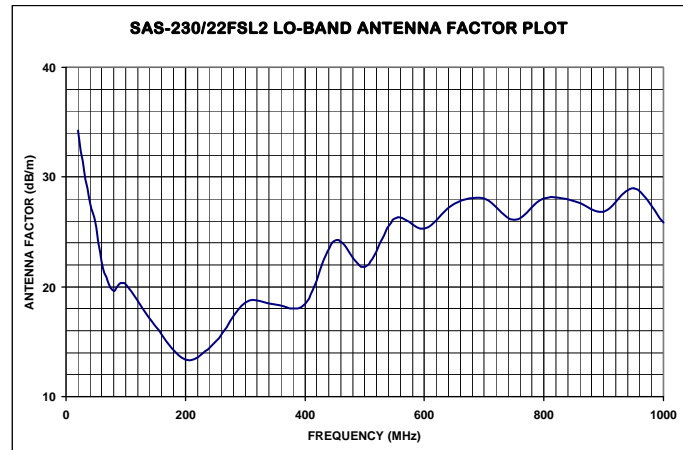
Weight: 22 Lbs (10 Kgs) MAX

Environmental:

Permissible Wind Speed: 120 mph
Temperature: - 40°C to + 55°C
Non Operating: - 40°C to + 70° C

OPTIONS:

Tripods,
 Pneumatic Masts,
 Multi-couplers,
 Power supply (**PFS-SAS** Recommended).
 Individual calibration

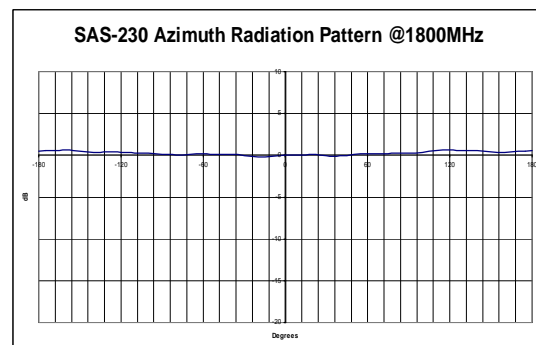
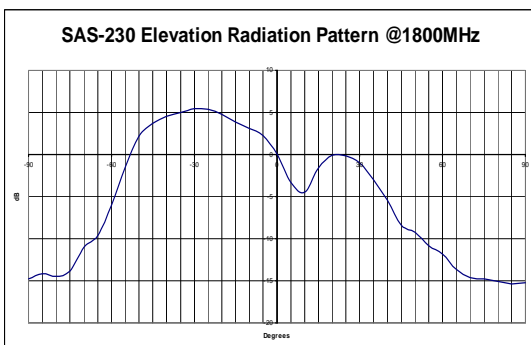
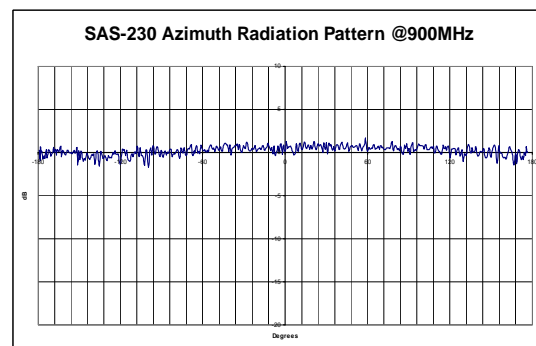
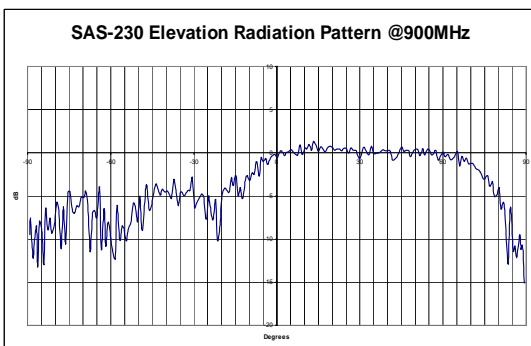
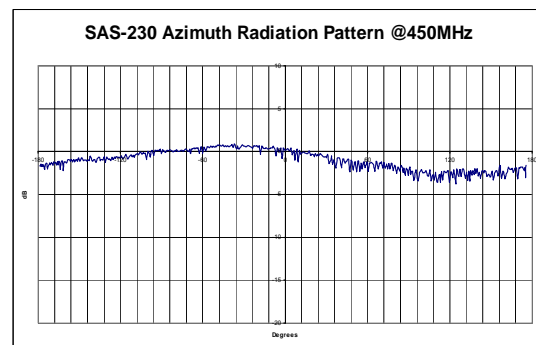
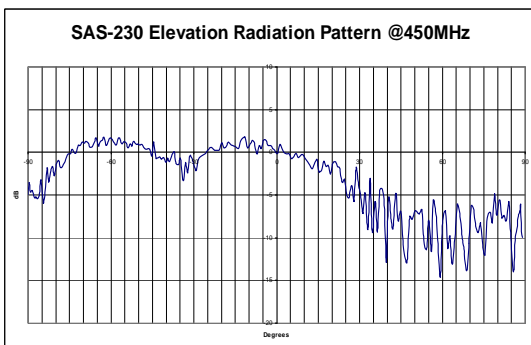
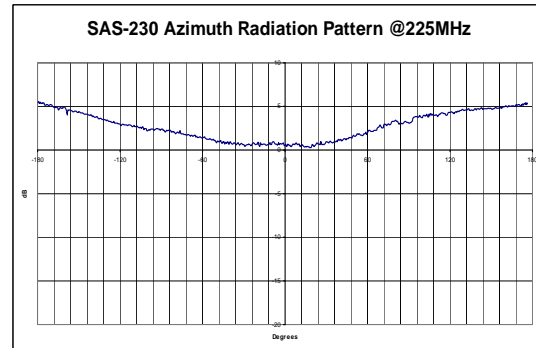
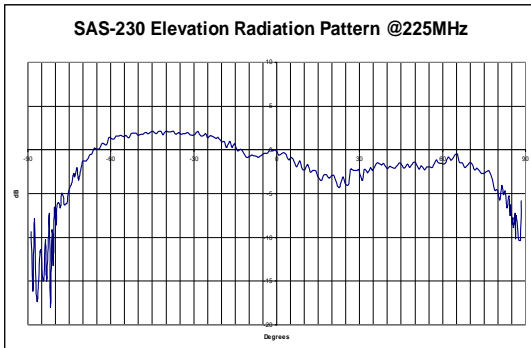


Mounting Plate



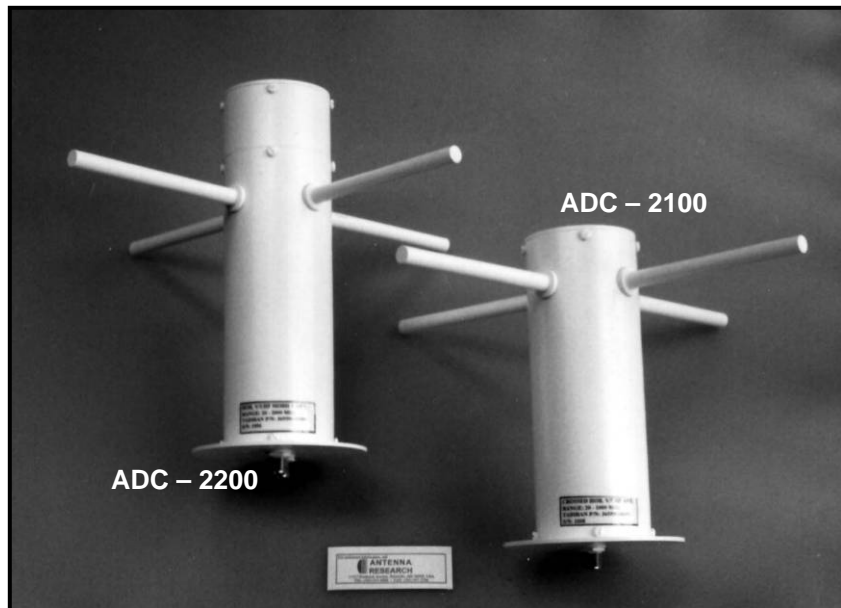
PFS-SAS

RADIATION PATTERNS (SAS-230/22FSL2)



C) HORIZONTALLY POLARIZED, RECEIVE ONLY

Choose an **ADC** antenna for extremely broadband applications to receive horizontally polarized signals and 360 degree coverage in azimuth. Our **ADC series** antennas are ideally suited for spectrum surveillance and spectrum management applications. These are extremely broadband portable receive antennas designed specifically for accurate measurement of the horizontally polarized electric field intensity. Integral active networks provide outstanding performance over the entire frequency range of operation.



Horizontally polarized Omni antennas **ADC-2100**, **ADC-2200** and **ADC-2300** cover the frequency bands 20-1000 MHz, 20-2000 MHz and 20-3000 MHz respectively.

ADC-12/A2Z/P is designed for shipboard applications where both high gain and high sensitivity are important. This antenna is optimized for reception of RF signals on the horizon for nautical and surveillance applications.

All **ADC** antennas operate with a 12 VDC decoupled power supply. Remote and rack mountable power supplies are also available. These antennas can be modified for use with auto batteries for vehicle mounted applications.

The **ADC-230** series antennas also cover the frequency band from 20 MHz to 3 GHz. These antennas are available with high and low band preamplifiers which may be bypassed remotely by integrated low loss switches. **ADC-230** antennas can be modified for significantly larger overload protection for use in a high field environment. See a separate datasheet for additional information on various options for **ADC-230** antennas.

Power supply / Control box, Model **PFS-SAS**, is recommended for use with the **ADC-230** antennas.

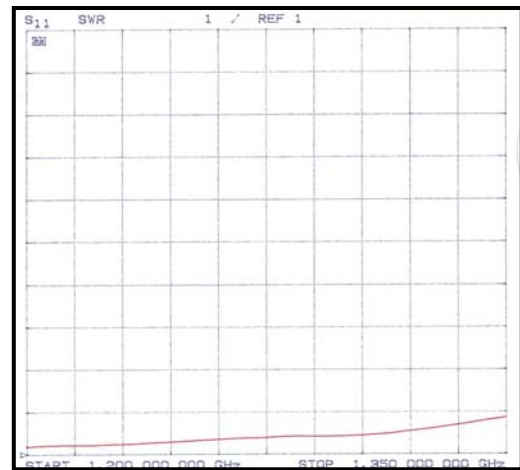


SPECIFICATIONS:

	FREQUENCY (MHZ)	NO. OF PORTS	SIZE (L X W X H)	WEIGHT (LBS/KG)
ADC-2300/A	20 - 3000	2	33 x 33 x 42 cm	10 / 4.5
ADC-2200/A	20 – 2000	2	40 x 40 x 30 cm	3.7 / 1.68
ADC-2100/A	20 - 1000	1	40 x 40 x 24 cm	3 / 1.36
ADC-12/A2Z/P	1200 – 1350	1	10 x 10 x 30 cm	4
ADC-230*	20 – 3000	1 or 2*	33 x 33 x 42 cm	10 / 4.5

* See a separate datasheet for more information on **ADC-230**

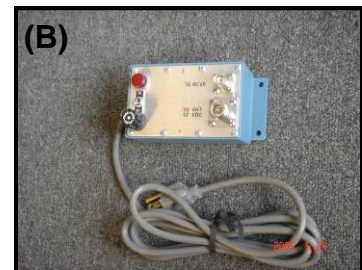
- Polarization:** Horizontal
- Rad Pattern:** Omni directional
- Impedance:** 50 Ohms
- Wind Survival:** 100 mph
- Power Supply:** Remote Decoupling, 12 VDC
- Overload:** 3 V/m
- Temperature:** -40°C to +55°C
- Connector(s):** Type N Female
- Standard Color :** ARA White / Iridite



ADC-12/A2Z/P VSWR Curve

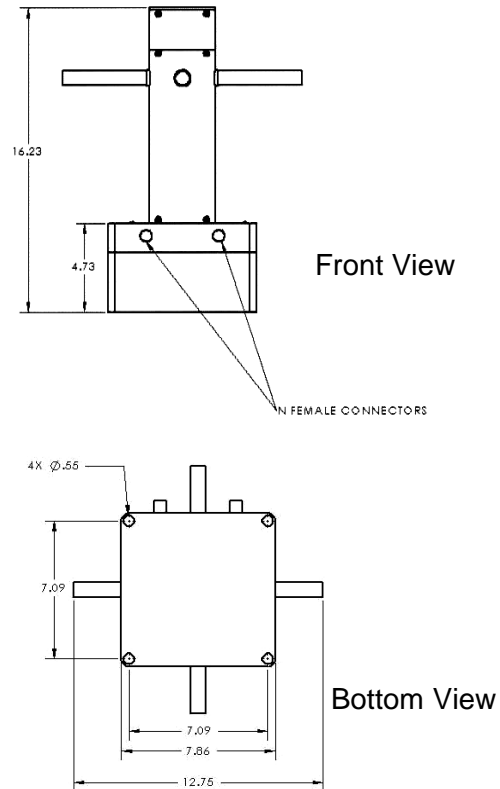
OPTIONS:

- A) Tripods
- B) **PSD-12 Remote Power Supply:** Specify Input Power Supply Voltages for the Remote Power Supply: 115 VAC (standard), 12 VDC, 24VDC, or 230VAC
- C) **PSD-12 Rack Mountable Power Supply:** Specify Input Power Supply Voltages for the Rack Mountable Power Supply: 115 VAC (standard), 12VDC, 24VDC, or 230VAC
- D) Carrying Case



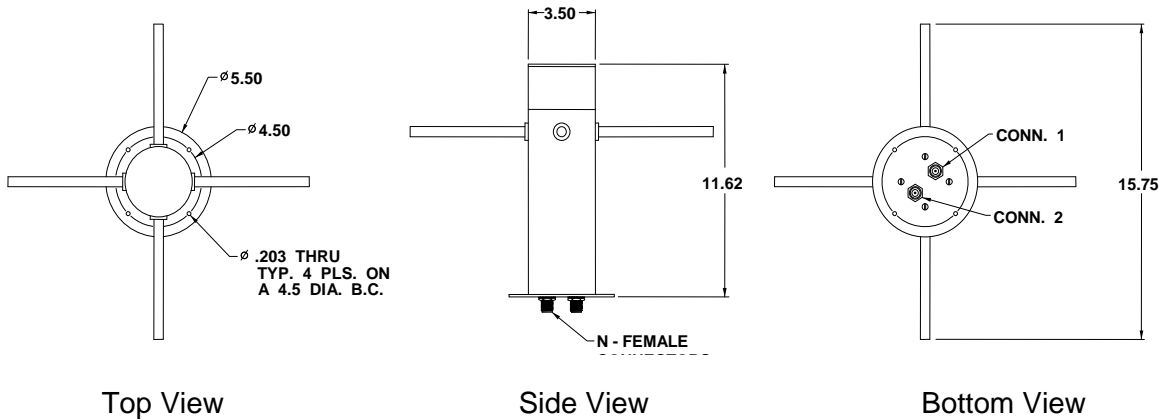
MODEL ADC-2200/A TYPICAL ANTENNA FACTOR TYPICAL SENSITIVITY		
Frequency MHz	AFE (dB/m)	MDF (dB μ V/m)
LOW BAND		
20	18.9	-2.9
40	23.9	1.4
60	21.4	-0.8
80	15.1	-7.3
100	20.1	-1.7
150	13.0	-10.5
200	5.0	-19.4
250	2.6	-20.1
300	0.0	-24.6
400	5.4	-19.7
500	9.0	-16.8
600	10.0	-14.3
700	12.0	-13.6
850	13.8	-13.0
1000	18.6	-8.2
HIGH BAND		
1000	36.0	
1500	41.4	
2000	45.0	

MECHANICAL OUTLINE OF THE ADC-2300



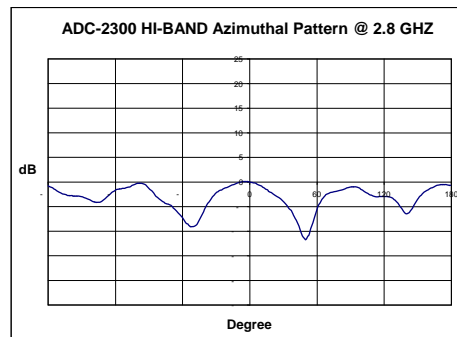
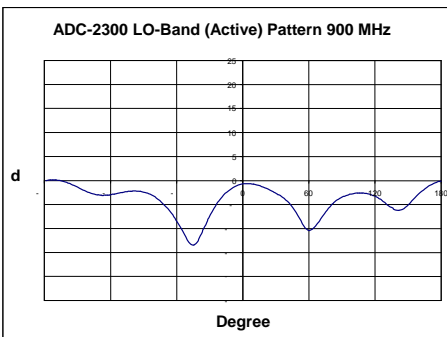
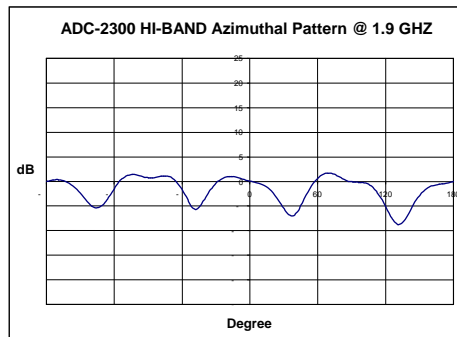
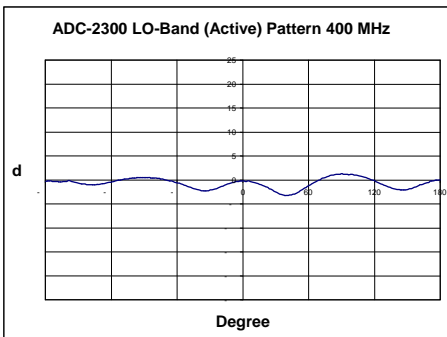
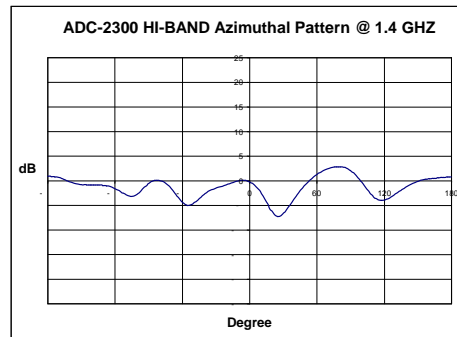
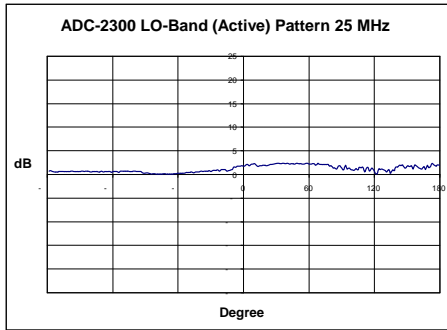
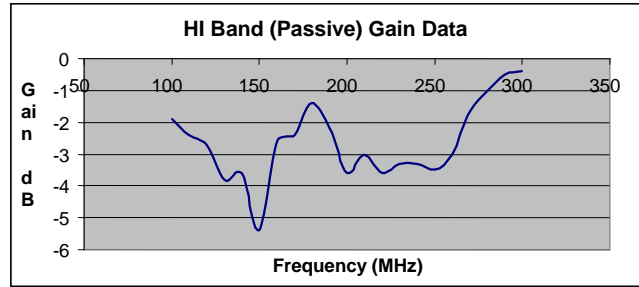
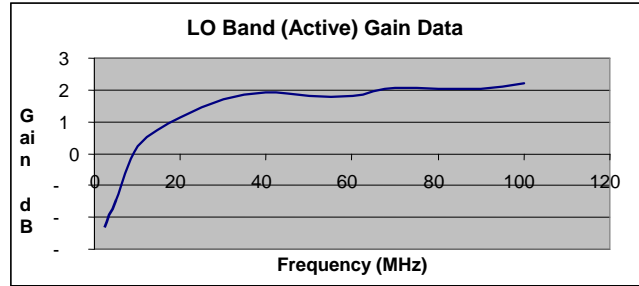
For the Typical Antenna Factor of the **ADC-2100/A**, see the low band performance of the **ADC-2200/A** in the Table given above. Typical sensitivity of the **ADC-2100/A** is the same as the sensitivity of an **ADC-2200/A**. High band of the **ADC-2200/A** is passive.

MECHANICAL OUTLINE OF THE ADC-2200/A



Note: Same hole pattern and bottom view for **ADC-2100/A**

ADC – 2300



ADC – 230

The **ADC-230** series antennas are our extremely broadband (from 20 MHz to beyond 3 GHz) horizontally polarized omni-directional antennas, ideally suited for spectrum surveillance and spectrum management applications. Each antenna unit is supplied with RF and power connections accessible from the side of the **ADC-230** antenna. The standard power/control connector is a 10-pin MS connector that carries all DC voltages and control lines required to operate the unit.

ADC-230s are available in single band configuration or with two outputs (low band covering 20 MHz to 1.0 GHz and High band covering 1 GHz to 3 GHz). These antennas are available with high and/or low band preamplifiers which may be bypassed remotely by integrated low loss coax switches. Several models are available with Failsafe switches and Limiters for use in high field environments.



ADC-230/ "a" "b" "d"

The **PFS-SAS** is a ruggedized power supply/control box recommended for use with **ADC-230** antennas. It provides dc output voltages to drive an **ADC-230** antenna and also enables the Band/Amplifier bypass switching capability. The **PFS-SAS** interfaces directly with worldwide AC mains. For controlling purposes, it has a circuitry designed to produce TTL outputs. This provides toggling between different operations modes of Band/Amplifier Bypass/Inline modes.

Select an **ADC-230** "a" "b" "d" model for your application where,

a = "1" for Single output. These models have additional insertion loss of 1.5 dB max at 1GHz relative to models with 2 output ports.

a = "2" for Dual outputs (low band covering 20 MHz to 1.0 GHz and High band covering 1 GHz to 3 GHz).

b = "1" for active low band (from 20 MHz to 1 GHz) and passive high band (from 1 GHz up to 3 GHz minimum).

NOTE: Add "FS" for a Failsafe switch for preamplifier BYPASS capability.

b = "2" for active low band (from 20 MHz to 1 GHz) and active high band (from 1 GHz up to 3 GHz minimum).

NOTE: Add "FS" for Two FAILSAFE switches for preamplifier BYPASS capability.

d = L1 for overload protection in one active band

d = L2 for overload protection in both active bands

ELECTRICAL:

Polarization: Horizontal
Pattern: Omnidirectional
Impedance: 50 Ohm
VSWR: 2:1 Typ.

POWER requirements:

12 VDC for Pre Amplifiers
 5 VDC for switch(es)

LOW BAND:

Sensitivity: 36.9 dBμV/m
Overload: 25.7 dBV/m

HIGH BAND:

Sensitivity: 21.9 dBμV/m
Overload: 32.1 dBV/m

MECHANICAL/MOUNTING:

Connectors: RF: Type N Female
 Control: MS 10 Pin (Location not specified)
Overall Dimensions: 12.75 x 12.75 x 16.25
Weight: 10/4.5

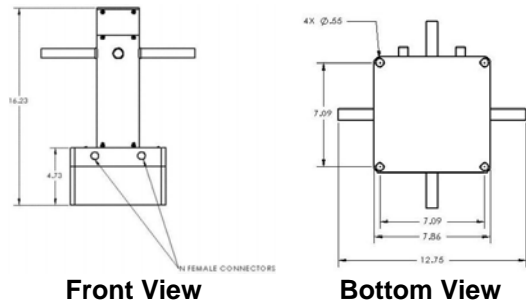
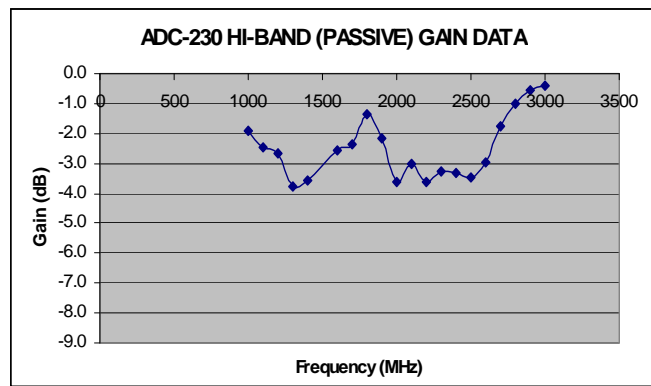
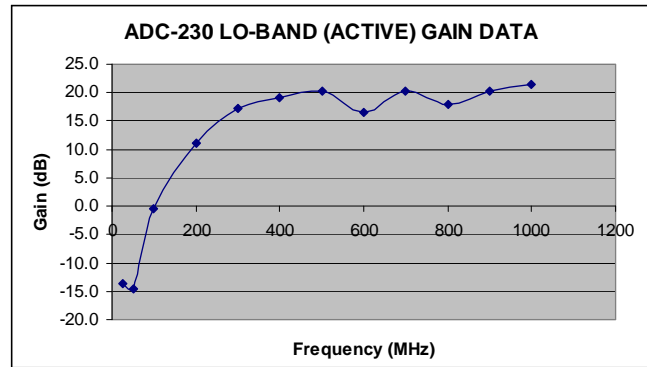
ENVIRONMENTAL:

Permissible Wind Speed: 120 mph
Ice: 2" radial with radome
Temperature: Operating: -40°C to +55°C
Non Operating: -40 C to +70C

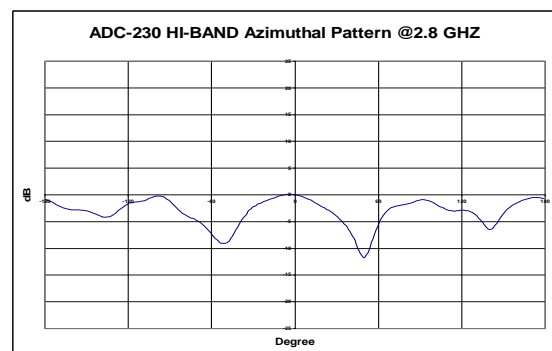
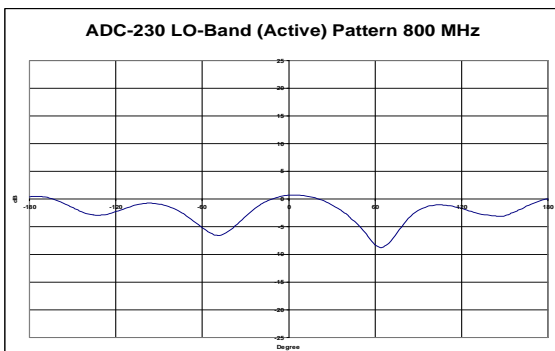
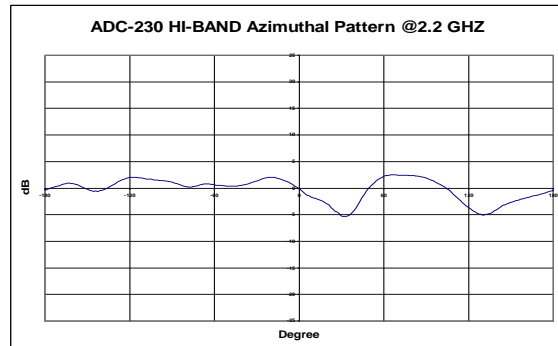
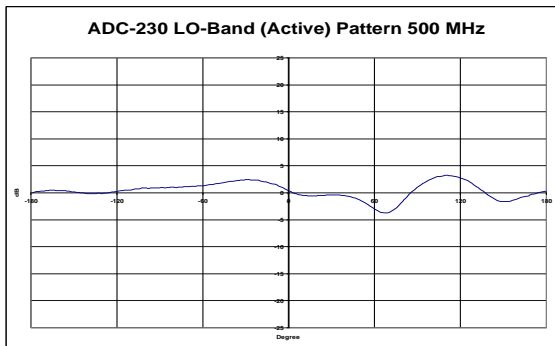
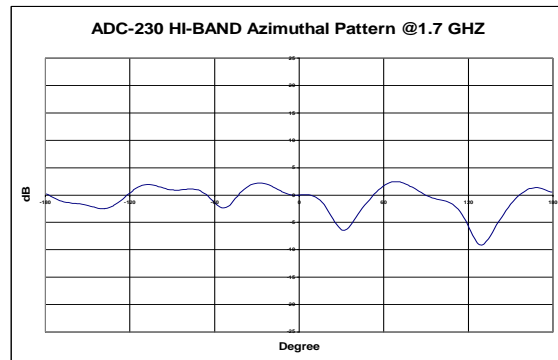
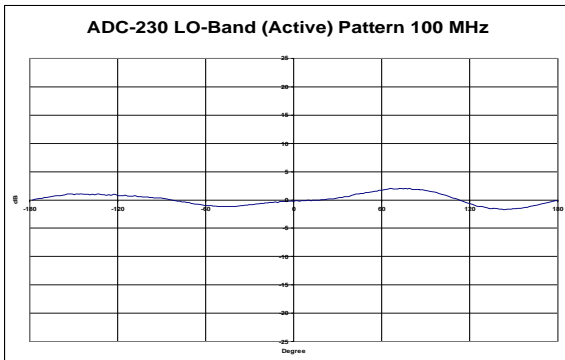
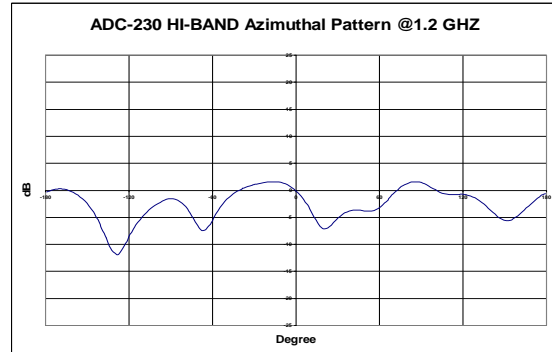
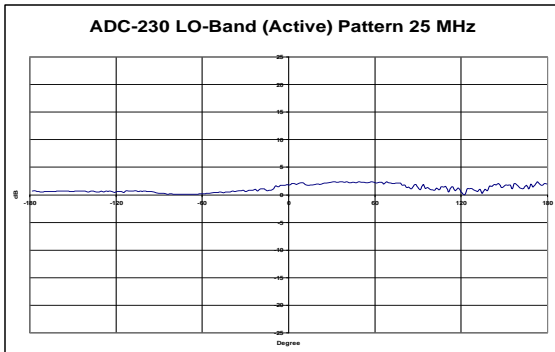
OPTIONS:

Tripods,
 Pneumatic Masts,
 Multicouplers,
 Power supply: **PFS-SAS** recommended

RADIATION PATTERNS (ADC – 230/21)
 (normalized)



PFS-SAS



KEY FEATURES

- Low cost, ruggedized power supply for use with our **SAS-230** and **ADC-230** Series spectrum surveillance antennas.
- Supplies power to high and low band amplifiers (18 volts D.C. at 1 amp)
- Supplies control voltages to high and low band bypass switches (TTL logic)
- Accepts AC input range of 85 to 250 VAC and 50 to 60 Hz
- Uses MS3112E12-10S connector for output cable to an antenna system.
- Provides line rectification, EMI/RFI filtering, transient protection and inrush limiting.
- Reduces line frequency related ripples and converter switching noise to negligible amounts.



The Low-band and High-band switches toggle between different operation modes as listed in the below table.

Operation Mode	LOW-BAND switch	HIGH-BAND switch
Low-band passive & High-band active	BYPASS- TTL Low	INLINE- TTL High
Low-band active & High-band active	INLINE- TTL High	INLINE- TTL High
Low-band passive & High-band passive	BYPASS- TTL Low	BYPASS- TTL Low
Low-band active & High-band passive	INLINE- TTL High	BYPASS- TTL Low

The output connector of the box is a 10-pin MS3112E 12-10S. The suggested mating connector for a cable is MS3112F12-10P. The following table is a list of the output connector pin outs.

Pin Number	Description
A,B,C	+18 VDC for driving Regulator Board
D	No connection
E	Bypass switch for TTL data to bypass Low Band
F	Bypass switch for TTC data to bypass High Band
G,H,J	GND
K	No connection

A) BICONICALS

Select a **VBC** or a **VBA** series omni antenna when directivity or gain at the horizon is important. The antenna need not be mounted on a ground plane.

The **VBC** and **VBA** antennas are well isolated from the base, resulting in a predictable elevation pattern and reduction in common mode interference.

These antennas are designed to withstand laminar wind flow velocities in excess of 100 miles per hour. All **VBC** and **VBA** series antennas are intended for all-weather applications.

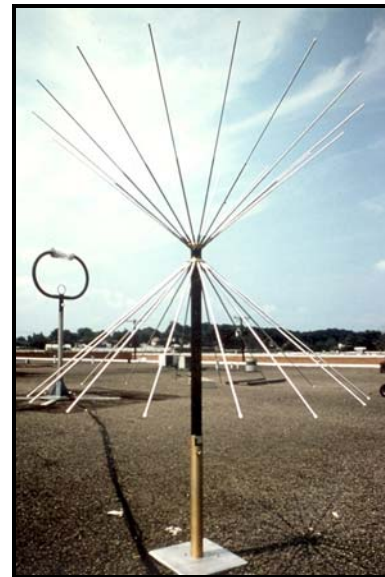
Antenna elements for **VBC** and **VBA** antennas are removable for ease of transport and storage.

Choose an active **VBA** antenna (Model: **VBA-310/A**) for receive-only applications.

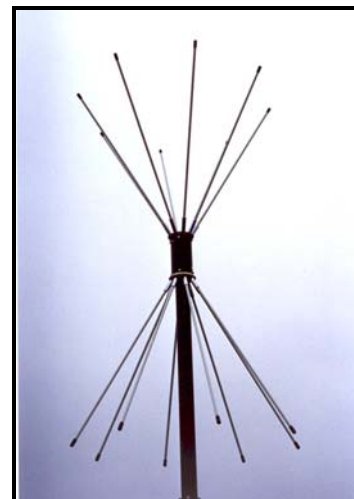
VBC-C3059-2 is ideal for tactical applications when quick deployment of the system is critical. All antenna elements fold around the mast section for storage. The antenna can be reassembled from the “storage” to the “in use” position in less than two minutes.

Choose a broadband **VBC** antenna for transmit and receive applications such as EMC immunity testing, receiving and measuring fields in a high field environment, and military applications, as well as tactical systems when space is at a premium.

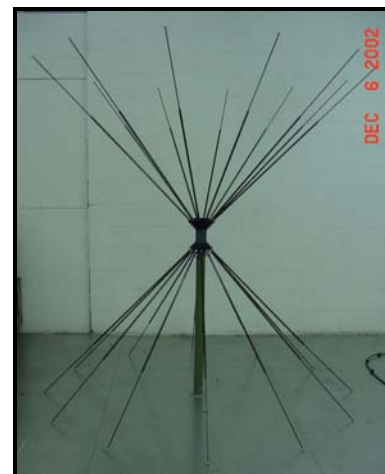
In a transmit mode, **VBC** series antennas can handle RF power levels in excess of a Kilowatt.



VBA-310/A



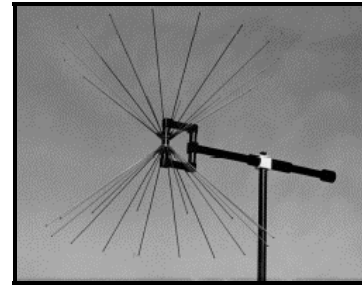
VBC-40



VBC-C3059-2

SPECIFICATIONS:

Impedance:	50 Ohms Nominal
Radiation Pattern:	OMNI in Azimuth
Temperature:	-50° C to +85° C
Polarization:	Linear Vertical



VBC-310 with cross arm (VBC-310/CA)

	VBC-310 *	VBA-310/A	VBC-40	VBC-C3059-2	VBC-418
FREQUENCY (MHZ)	50 - 1000	30 - 1000	27 - 100	25 - 1000	4000 - 18000
VSWR (TYP.)	<3 : 1	2 : 1	2 : 1	<6.5:1 at 25 MHz <3.5:1 30-100 MHz <3:1 100-1000MHz	2 : 1
INPUT POWER MAX.	1 kW	Rx only	1 kW	500 W	25 W
TYPICAL GAIN	0 dBi	14.5 dB with Preamplifier	0 dBi	> -10 dBi 25-50 MHz > -2 dBi +/- 1dBi 50-100 MHz 0 dBi +/- 3 dBi 100-1000 MHz	0 dBi
CONNECTOR	N female	N female	N female	N female with chained environmental cap	SMA female
HEIGHT	10' with Mast	10' with Mast	13'	90" (in use) 50" (in storage)	4"
DIAMETER	6'	6'	60"	97" (in use) 7"(storage position)	2"
WEIGHT (LBS / KG)	35 / 15.75	35 / 15.75	19 / 8.5	<30 lbs	<1 lb
WIND TOLERANCE	100 mph	100 mph	120 kph	100 mph continuous wind or gusts to 120 mph	100 mph
		Active Receive Only			

*Like other **VBC** antennas, the **VBC-310** is mounted from the center. It can be modified with a cross-arm mounting adaptor which allows the **VBC-310** to be mounted from the middle section between the upper and lower elements to manually adjust the polarization. For adjustable polarization, order Model # **VBC-310/CA**.

VBC-C3059-2

VBC-C3059-2 is a Vertical Biconical antenna with spring-loaded elements for quick movement from the 'Storage' to the 'In Use' position. It is ideally suited for tactical transmit and receive applications. **VBC-C3059-2** has an instantaneous operating band from 25 MHz to 1000 MHz. **VBC-C3059-2** can handle RF power levels in excess of 500W Power.

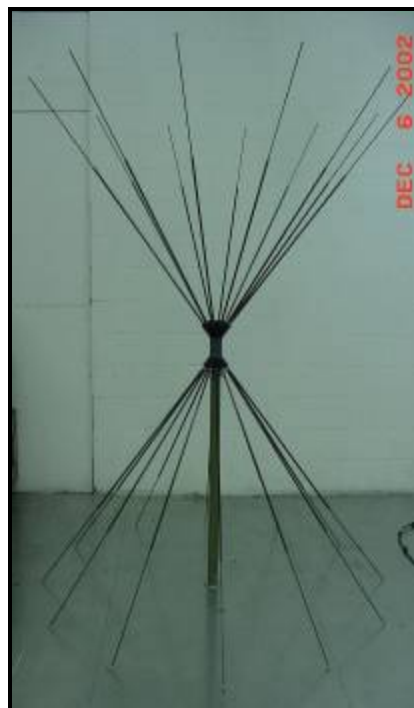
The **VBC-C3059-2** is designed to be used in either the extended element configuration for best low frequency performance, or with elements partially retracted, with a slight degradation in performance at the lower band.

Antenna elements are extendable from the base 48" and 40" inches out to 69" and 58". Both the Upper and lower groups of elements are configured to fold "DOWN" around the supplied fiberglass mast. The folded antenna stores within a cylinder of 7 inches in diameter and 50 inches long. The assembly time for the antenna is < 2 minutes. No tools are required.

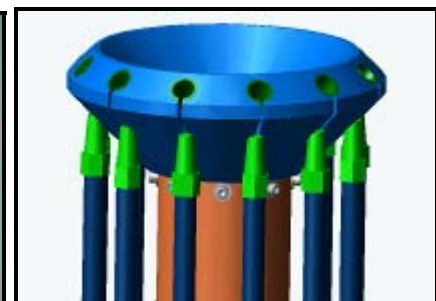
The connector has an environmental cap attached. The antenna is designed to operate in wind speeds up to 161 kph and survive in wind gusts up to 193 kph. The antenna remains mechanically stable in an icing load of 15 Kg/sq. mtr. (not concurrently with maximum wind load).



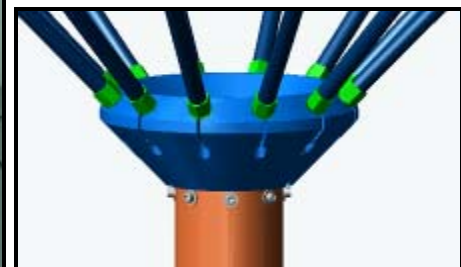
Antenna Folded



Antenna Open



Storage position



in use position

VBC-C3059-2

Typical Gain Data:

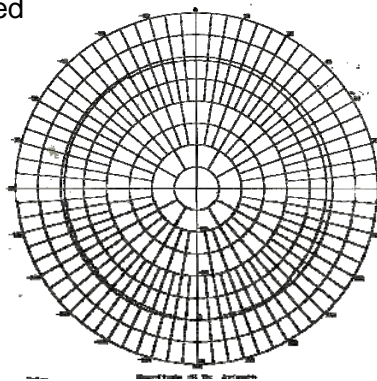
RADIATION PATTERNS (with elements extended):

a) Top and Bottom Elements Extended

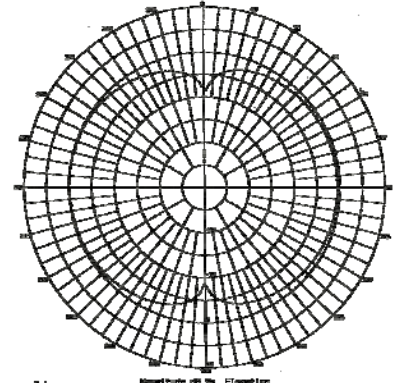
Top Elements: 69"

Bottom Elements: 58"

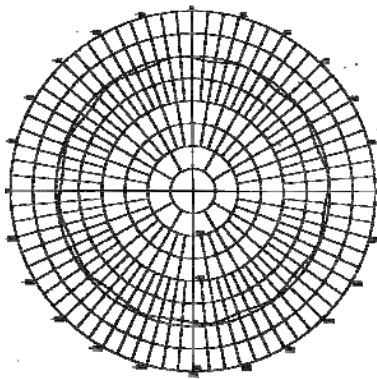
FREQUENCY MHz	3m Gain dBi
25	-9.5
50	-2.3
160	0.7
250	-0.3
500	1.7
750	-0.1
1000	-1.2



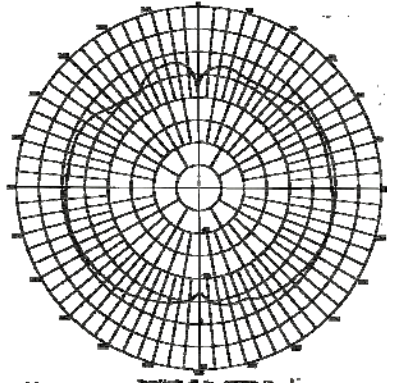
25MHz AZ



25MHz EL



250MHz AZ



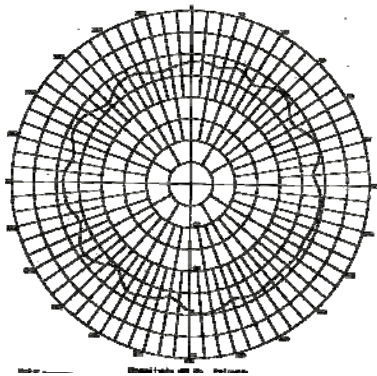
250MHz EL

b) Top and Bottom Elements not Extended

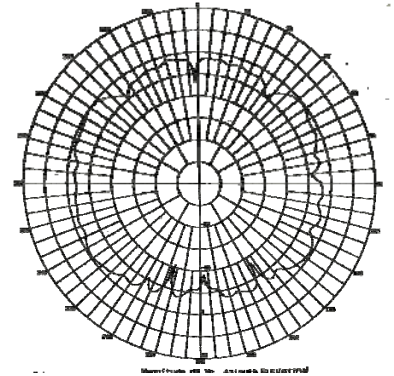
Top Elements: 48"

Bottom Elements: 40"

FREQUENCY MHz	3m Gain dBi
50	-3
160	0.4
250	-0.6



1000MHz AZ



1000MHz EL

B) SLANT LINEAR BICONICALS

The **BSB** series antennas are stackable biconical antennas which offer excellent omni directional performance over a wideband. The typical biconical radiation pattern makes these antennas ideally suited for reception of signals on the horizon for nautical and broadband spectrum surveillance applications. The slant linear polarization makes them suitable for receiving vertical, horizontal, and circularly polarized signals.

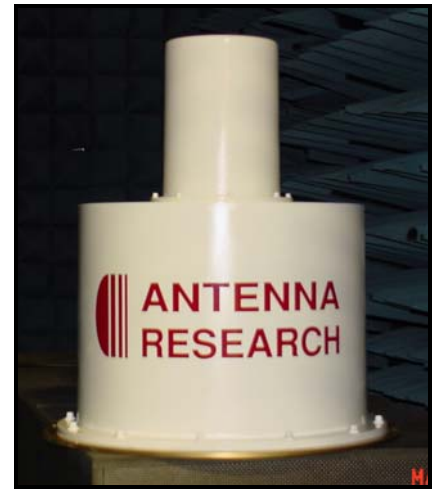
The **BSB** series antennas transmit RF signals slanted at 45 degrees.

Multiple antennas can be stacked for extremely wideband operation. The stacked antenna models are available with multiple connectors (one for each band) or a single connector for extremely wide band operation.

All **BSB** series antennas are sealed in low-loss dielectric radomes for shipborne and various outdoor applications.

SPECIFICATIONS:

- Polarization:** Slant Linear, 45 degrees (Transmit)
Vertical, Horizontal, Circular (Receive)
- Impedance:** 50 Ohms Nominal
- Co-Polarized Gain:** 0 dBi
- Radiation Pattern:** Omni, 3dB variation
- VSWR (Avg.):** 2 :1 (3 :1 Max)



BSB – 0518



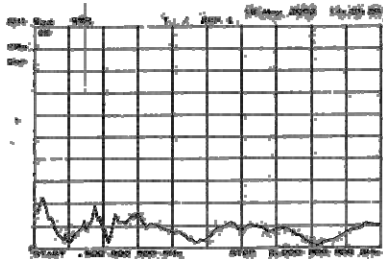
BSB – 418

	BSB-0502	BSB-14	BSB-26	BSB-418
FREQUENCY (GHZ)	0.5 – 2	1.0 - 4.0	2 - 6	4 - 18
BEAM WIDTH (DG)	50 – 180	50 - 180	50 - 180	50 - 180
CW POWER (W)	50	50	15	15
CONNECTOR TYPE(S)	N	N	SMA	SMA
SIZE	17"D x 9"H	8"D x 7.5"H	6" D x 6" H	4" D x 5" H
OUTPUT PORTS AND FREQUENCY BANDS	1	1	1	1

	BSB-118	BSB-118/S	BSB-0518
FREQUENCY (GHZ)	1.0 - 18.0	1.0 - 18.0	0.5 - 18.0
BEAM WIDTH (DG)	50 - 180	50 - 180	50 - 180
CW POWER (W)	15	15	15
CONNECTOR TYPE(S)	SMA	SMA	SMA
SIZE	8" D x 9.5" H	8" D x 9.5" H	17" D x 19" H
OUTPUT PORTS AND FREQUENCY BANDS	2 1.0 - 4.0 GHz 4.0 - 18.0 GHz	1	3 0.5 - 2.0 GHz 2.0 - 6.0 GHz 6.0 - 18.0 GHz

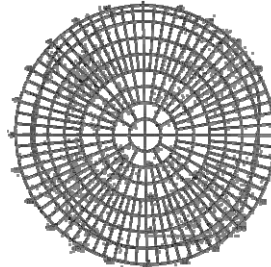
BSB-0518 VSWR:

0.5 - 2 GHz

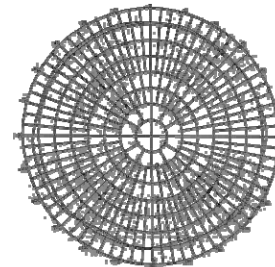


Radiation Patterns:

Port 1

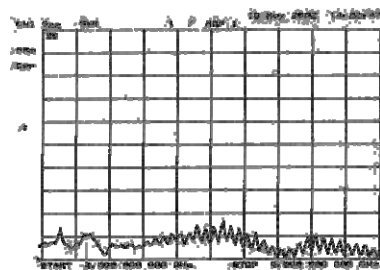


1.0GHz

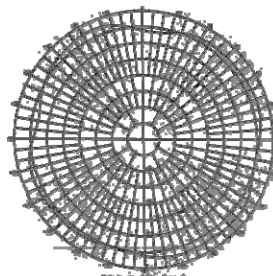


2.0GHz

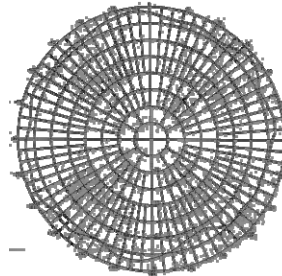
2 - 6 GHz



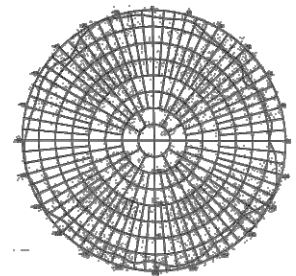
Port 2



2.0GHz

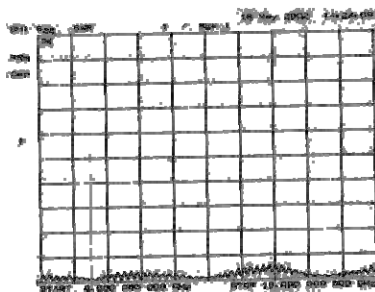


4.0GHz

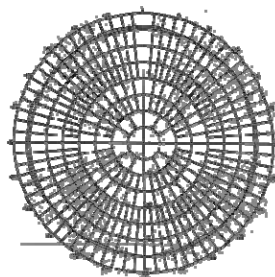


6.0GHz

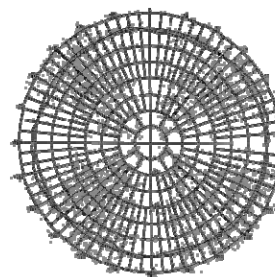
6 - 18 GHz



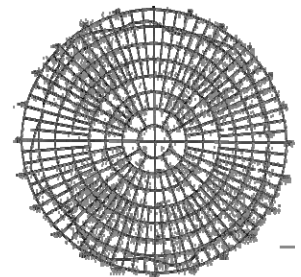
Port 3



6.0GHz



12.0GHz



18.0GHz

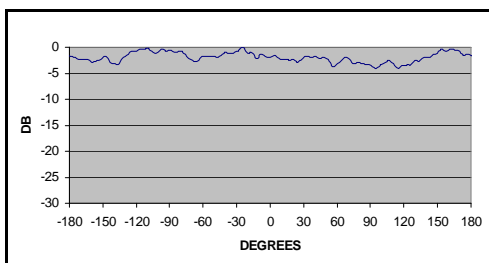
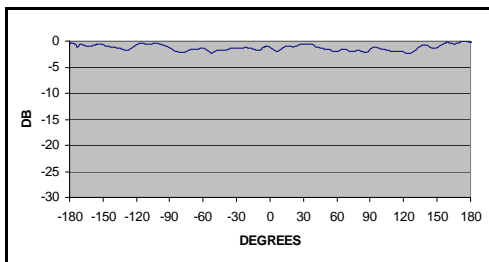
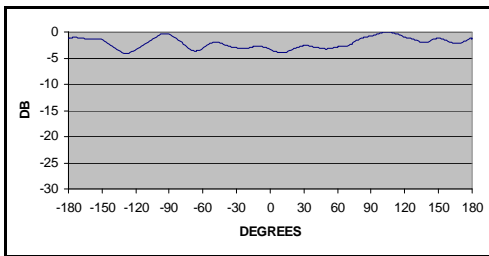
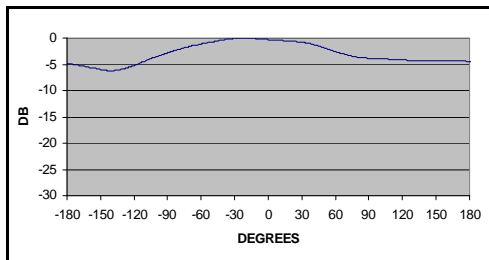
BSB – 118/S



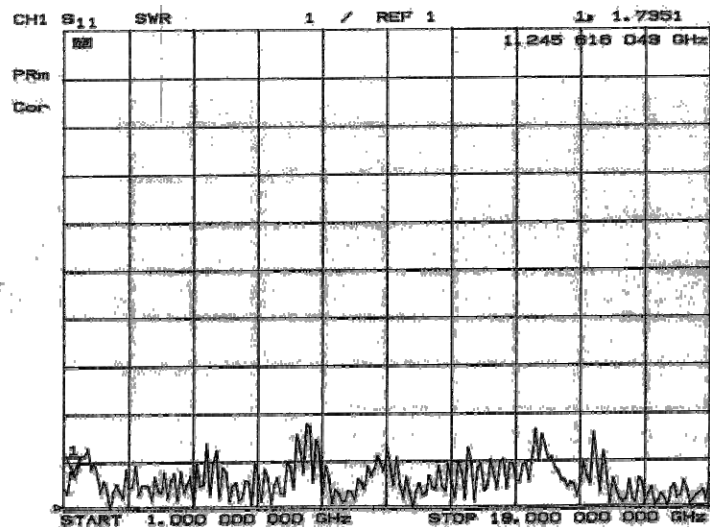
BSB-118/S AFE & Gain Data

Frequency MHz	AFE dB/m	Gain dBi
1	30.6	-0.4
2	35.2	1.0
3	40.0	-0.2
4	40.3	2.0
5	42.5	1.7
6	45.4	0.4
7	48.5	-1.4
8	46.4	1.9
9	47.1	2.2
10	48.5	1.7
11	48.7	2.3
12	52.3	-0.5
13	50.6	1.9
14	51.5	1.6
15	51.0	2.7
16	51.3	3.0
17	50.3	4.5
18	51.5	3.8

BSB-118/S Radiation Plots



BSB-118/S VSWR



C) ACTIVE DIPOLES

ADA series antennas are electrically small and easily transportable antennas, ideally suited for measuring electric fields and for broadband spectrum surveillance applications.

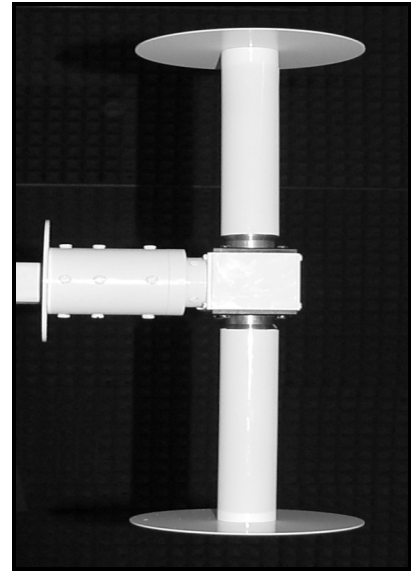
A broadband balun and a low-noise amplifier are integral parts of an **ADA** antenna. The active circuit design provides a near perfect balance, eliminating the need for a ground plane in the measurement.

For applications where antenna sensitivity is critical over a broad frequency range where no suitable ground plane is available, an **ADA** is your best choice.

Models **ADA-120/101/2** and **ADA-120/101/3** are available to measure 2 or 3 components of the electric field simultaneously. The **ADA-120/101/2** has two **ADA-120/101** antennas mounted orthogonally on a dielectric cube for monitoring or measuring horizontal and vertical components of the electric field. Model **ADA-120/101/3** has three **ADA-120/101** antennas mounted on a support cube for measuring all three components of the electric field.

SPECIFICATIONS:

Radiation Pattern:	Omni directional
Impedance:	50 Ohms
Dynamic Range:	>110dB
VSWR:	2 : 1
OverLoad:	3 V/m



ADA-120/101



ADA-120/101/3

	ADA-3010/101	ADA-120/101	ADA-3010/A
Frequency	30 MHz - 1 GHz	1 kHz - 200 MHz	30 MHz – 1 GHz
Polarization	Linear *	Linear *	Linear *
Power Supply	12 VDC, Decoupled	12 VDC, decoupled	AC / Internal Rechargeable
Connectors	Type BNC Female	Type N Female	Type BNC Female
Weight (Lbs/Kg)	5 / 2.3	5 / 2.3	10 / 4.5
Size	8' W, 19 1/2" Dipole	8' W, 19 1/2" Dipole	37"H, 19 1/2" Dipole
	Active Receive Only	Active Receive Only	Active Receive Only

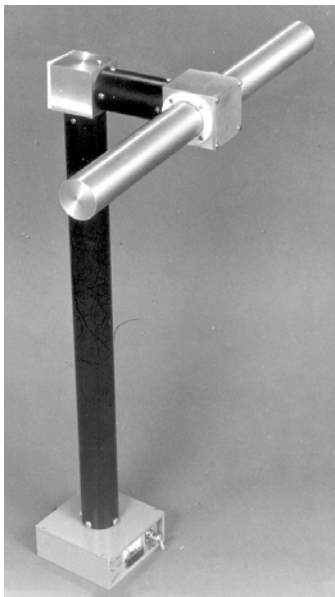
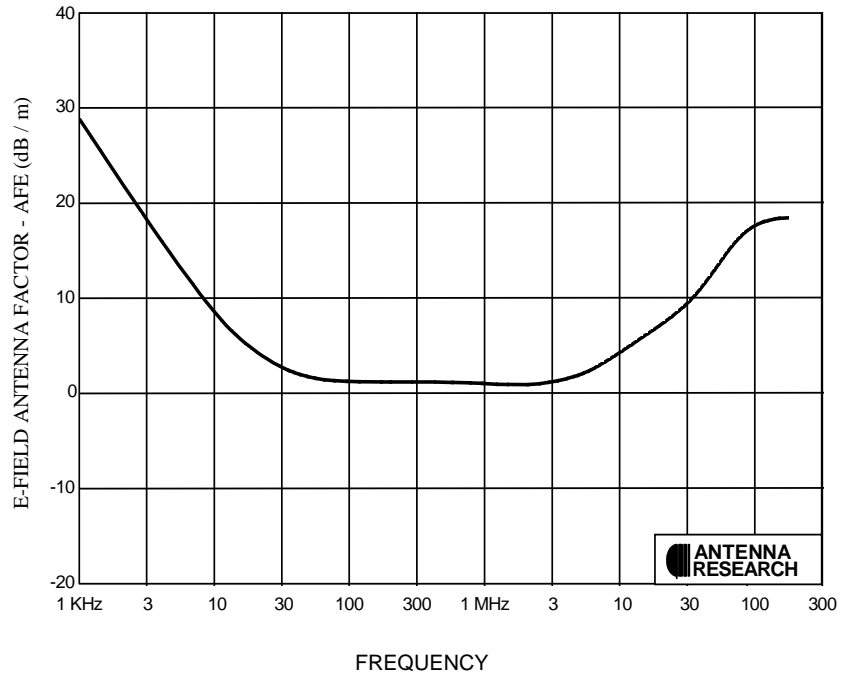
* adjustable

OPTIONS:

- 1) Power Supply (**PSD-12** recommended)
- 2) Tripod
- 3) Antenna Mast for EMC Testing Setup (**MA-240** or **MA-260** recommended)
- 4) Pneumatic Mast
- 5) Models ADA-120/101/2 or ADA-120/101/3

ADA-120/101 Typical Sensitivity (Minimum Detectable E-field, MDF) (Referenced to a 1 kHz Bandwidth)	
Frequency	MDF (dB μ V/m)
1 kHz	41.4
2 kHz	37.3
5 kHz	29.2
10 kHz	23.0
20 kHz	19.3
50 kHz	10.9
100 kHz	6.6
200 kHz	2.1
500 kHz	-1.6
1 MHz	-2.1
2 MHz	-2.2
5 MHz	-2.6
10 MHz	-2.5
20 MHz	-3.9
30 MHz	-5.9
40 MHz	-6.2
50 MHz	-6.1
60 MHz	-6.0
70 MHz	-6.3
80 MHz	-7.1
100 MHz	-6.1
125 MHz	-5.1
150 MHz	-5.4
200 MHz	-6.5

ADA - 120/101 - Typical Antenna Factor



ADA-3010/A

ADA-3010/101 Typical Antenna Factor	
Frequency MHz	AFE (dB m)
30	14.7
40	10.9
50	8.9
80	6.6
100	4.4
200	5.3
300	9.3
400	10.0
500	12.0
800	16.9
900	13.2
1000	12.5

ADA-3010/101 Typical Sensitivity (Minimum Detectable E-field, MDF) (Referenced to a 1 kHz Bandwidth)	
Frequency MHz	MDF (dB μ V/m)
30	-1.1
40	-4.9
50	-6.9
80	-9.2
100	-11.4
200	-10.5
300	-6.5
400	-5.8
500	-3.8
800	1.1
900	-2.6
1000	-3.3

D) CONICAL MONOPOLES

We offer three different types of **CMA Series** broadband omni antennas:

- 1) **CMA-710**, **CMA-750**, **CMA-410/M** and **CMA-118** are passive antennas for both transmit and receive applications. **CMA-410/M**, **CMA-710** and **CMA-750** are ideally suited for applications where omni coverage at or above the horizon is required and the antenna is mounted on a large ground plane. **CMA-118** may be mounted on a ground plane, a tripod or a mast for good omni coverage at or above the horizon. A tripod mounting adaptor is available for use with **CMA-118**.
- 2) **CMA-350A/A** is an active antenna for receive-only applications when coverage at or above the horizon is important. The antenna should be mounted on a large ground plane for best performance.

The low-noise amplifier is powered through the RF cable by a remote supply that employs a decoupling circuit.

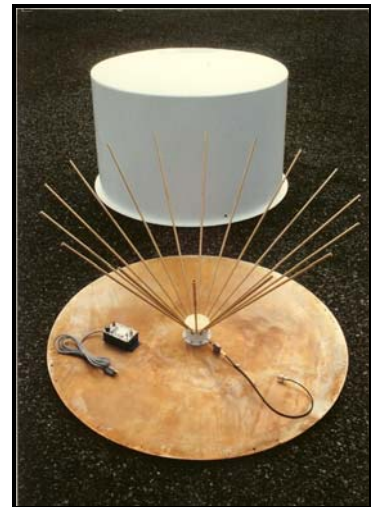
- 3) **CMA-5100/A** and **CMA-5240** antennas fold into small volume packages, ideally suited for extremely fast deployment in the field and tactical applications. These antennas are extremely broadband omnis which provide excellent coverage at and around the horizon when mounted on a mast. The power and RF cables can be secured to the supplied cable hook for stress relief on the connectors.

CMA-5240 offers an instantaneous bandwidth of operation from 0.5MHz to 2400MHz. It is a ruggedized antenna designed for use in harsh environments. A **CMA-5240** antenna can be operated in a passive or active mode. It is, by default, in passive mode while there is no DC power supplied to the antenna. Thus, by simply disabling the active circuit, the **CMA-5240** can operate in a fail safe mode in a high field environment. A new unique design for **CMA-5240** antenna elements has reduced the setup time to less than 3 minutes.

CMA-5100/A is an active antenna for receive only applications. The **CMA-5100/A** antenna is assembled by inserting the 32 elements into the antenna head and tightening them by hand.



CMA-118/A



CMA-350A/A



CMA-410/M

SPECIFICATIONS: CMA-5100/A and CMA-5240 only

Mechanical:

Dimensions:

Radial element length:
20 inches

Ground Plane element length:
28 inches

Antenna Diameter:
66 inches for operation and 7 inches for storage

Antenna Height:
31 inches for operation and 37 inches for storage

Mounting:
Unit will accept 1 7/8" – 2 3/8" Post

Weight: 8lbs (CMA-5100/A) and 12lbs (CMA-5240)



CMA – 5240



	CMA-5100/A	CMA-5240
Frequency Range	0.5 to 1000 MHz	0.5 to 2400 MHz
Radiation Pattern	Omni-directional	Omni-directional
Polarization	Vertical	Vertical
Elevation Beamwidth	40 degrees nominal	40 degrees nominal
Antenna Factor		
1 To 20 MHz	3 dB/m	3 dB/m
30 MHz	-2 dB/m	-2 dB/m
40 MHz	-5 dB/m	-5 dB/m
50 To 82 MHz	-5 dB/m	-5 dB/m
98 To 1000 MHz	8 dB/m	-4 dB/m to 18 dBm
1 - 2.4 GHz	N/A	18 dBm to 25 dBm
2nd Order Intercept	+ 50 dBm	+ 40 dBm
3rd Order Intercept	+ 35 dBm	+ 30 dBm
Noise Figure	3 dB	4 to 6 dB
VSWR	2.0 : 1 typical	2.5 : 1 Typical
Output Impedance	50 Ohm	
RF Connector	N Female	
Supply Connector	MS-1302A-10SL-3P	
Input Voltage (VDC)	11.4 - 14.5	
Current Drain	550 mA	<1A

SPECIFICATIONS:

Directivity: omnidirectional

Impedance: 50 ohms

	CMP-710	CMP-750	CMA-350	CMP-118	CMP-824
Old Model #	CMA-710	CMA-750	CMA-350A/A	CMA-118/A	CMA-410/M
Frequency (MHz)	70 - 1000	70 - 500	30 - 1000	1000 - 18000	800-2400
VSWR	< 2.5 : 1	< 2.5 : 1	< 2 : 1	2.0 : 1 typ.	< 2.5:1
Power	250 W CW, 500 W peak	400 W CW, 800 W peak	N/A	50 W CW	100 W CW
Connector	N Female	N Female	N Female	SMA Female	N Female
Radome	No	Optional	Optional	Included	No
Size (D x H)	40" x 23"	42" x 25"	42" x 25"	8" x 2.8"	16" x 7"
Weight (lbs/kg)	30 / 14	30 / 14	30 / 14	3 / 1.5	3 / 1.5
	Active Receive Only				

OPTION: Tripod Mounting adaptor for **CMP-118**

TYPICAL E-FIELD ANTENNA FACTOR AND GAIN						
Frequency MHz	CMP-750		CMA-350		CMP-710	
	AFE dB M ⁻¹	GAIN dBi	AFE dB M ⁻¹	GAIN* dBi	AFE dB M ⁻¹	GAIN dBi
30			-0.5	0.3		
40			-5.0	7.3		
50			-5.9	10.1		
60			-6.8	12.6	Long Elements	
70	7.3	-0.2	-5.5	12.6	7.3	-0.2
80	7.7	0.6	-4.4	12.7	7.7	0.6
100	9.4	0.8	-3.0	13.2	9.4	0.8
125	11.1	1.1		13.2	11.1	1.1
150	12.8	1.0	0.3	13.4	12.8	1.0
					Short Elements	
200	15.2	1.1	2.6	13.6	15.5	0.8
300	20.0	-0.2	6.4	13.4	18.8	1.0
400	22.5	-0.2	9.3	12.9	21.3	1.0
500	25.0	-0.8	11.6	12.6	23.4	0.8
600			13.5	12.3	24.5	1.3
700			15.1	12.0	22.7	4.4
800			16.8	11.5	26.0	2.3
900			18.1	11.2	28.6	0.7
1000			19.2	11.0	29.7	0.5

* with Pre-Amplifier



CMP-410/M VSWR Plot

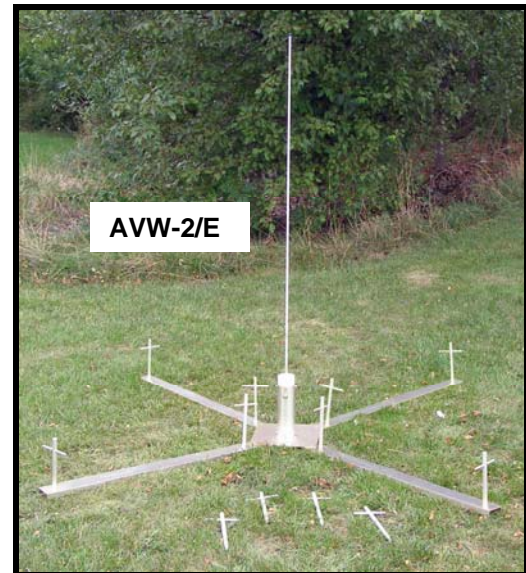
CMA-118 Typical VSWR and Gain		
Frequency (GHz)	VSWR	Gain* (dBi)
1.0	1.5	2.9
2.0	1.25	3.0
3.0	1.5	2.0
4.0	2.1	3.0
5.0	1.8	4.2
6.0	1.5	3.6
7.0	1.4	3.4
8.0	1.4	3.3
9.0	2.0	6.1
10.0	2.1	5.7
11.0	2.2	5.1
12.0	2.1	4.7
18.0	1.9	4.5

*for 25° elevation

E) ACTIVE WHIPS

Our active whip antennas offer flat antenna factors, extreme sensitivities, ultra wide dynamic range and rugged construction. The excellent characteristics of active receiving antennas are a result of carefully matching the passive antenna structure to the active circuitry. No band switching is required over the entire multioctave band of operation.

The frequency-independent nature and weatherproof design of these antennas make them useful for almost any receiving application requiring a small antenna. **AVW-2** antennas are designed to meet severe environmental conditions. These antennas are ideally suited for shipborne applications since little degradation in overall performance is noticed during continuous exposure to salt spray.

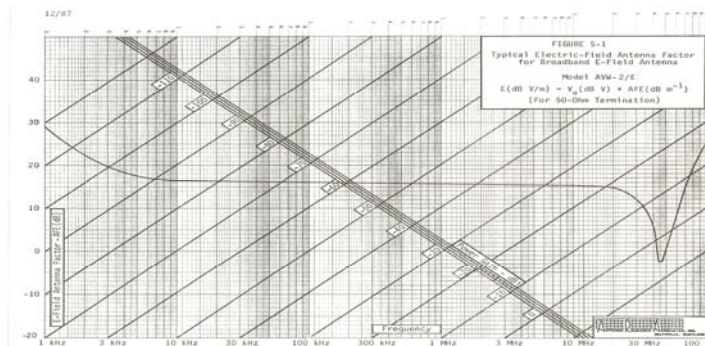


Directional beam arrays of these units can be realized easily since mutual coupling effects of phasing are insignificant.

AVW-2 antennas may be mounted on virtually any flat surface where a six-foot square area is available.

SPECIFICATIONS:

- Impedance:** 50 Ohms
- Directionality:** OMNI
- Wind:** 100 mph with 1" radial ice
- Radiation Pattern:** Omni in Azimuth



	Frequency	Power Supply	Overload	Connector	Height	Weight (lbs/kg)	Sensitivity 1 kHz bandwidth
AVW-2/E	1 kHz - 100 MHz	Remote, 15 VDC	2.0 V/m	N Female	6'	30 / 13.5	.5μV/m above 300 kHz
Active/Receive only							

- OPTIONS:**
- A) 100' RF Cable, N Connectors
 - B) Remote Decoupling Power Supply (**PSD-15** recommended)
 - C) Fiber Optic Link (Vialite model recommended)

WDA series antennas are optimized for both broadband and high gain performance. These antennas are ideally suited for use with frequency hopping radios and wideband jammers where tuning or band switching is difficult and high gain omnidirectional performance is essential. The sealed radome offers mechanical stability and environmental protection. The antenna elements in a **WDA** antenna are arrayed and center-fed using a unique method (patent pending) of feeder cable arrangement which creates superb wideband performance with few compromises.

OVP, OHP and **RSA series** high gain Omni antennas are used in a wide variety of applications including communication base stations (ground-to-air, point-to-point or mobile communication), Electronic News Gathering (ENG), MMDS and radar systems. Several models are enclosed in special radomes optimized for airborne applications.

Only linearly polarized omnis are included in this datasheet. **High gain circularly polarized omnis for mobile satellite communications and other applications are described in a separate datasheet on Helical Antennas.**

OVP series antennas include one or more vertically polarized dipoles mounted on a common axis and integrated into a dielectric radome. Multiport **OVP** antennas have at least 30dB isolation between ports. An internal matching network keeps all antenna parts at DC ground potential.

STA series super turnstile antennas are designed to provide omni-directional coverage for communication and spectrum surveillance in the VHF and UHF bands. The super turnstile design allows complete frequency coverage of the VHF/UHF commercial broadcast bands using a single antenna.

STA series antennas offer low to medium gain, low VSWR, and wide frequency bands for transmit applications. By combining single turnstile elements, higher gain can be achieved. An omnidirectional gain of up to 10 dBi can be achieved with a multiple bay antenna. The design is such that from one to eight bays can be constructed on a single modular mast.

One or more super turnstile elements, each covering a different frequency band, can be used in tandem on a single mast to effectively span much wider frequency ranges.



WDA-497 & WDA-1220



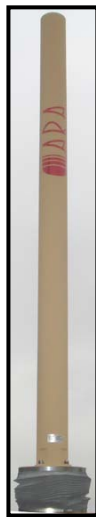
SWA - 47



STA - 5488/A

SPECIFICATIONS: Broadband and High Gain Omnis

Model Number	Frequency (MHz)	Inputs	Elev. Beam (Min. Deg)	Power Gain (dBi)	Length (In)	Diameter (Radome)	Weight (Lbs/Kg)
WDA-2126	20-6000	3	40	-10 - 4	80	4"	20 / 9.1
WDA-2245	225-400	1	30	3.5 TYP.	60	2"	8 / 3.6
WDA-497	400-970	1	30°	2.5 - 5.1	36	2.5"	4.5 / 2.05
WDA-497/2	400-970	2	65°	> 0	36	2.5"	4.9 / 2.2
WDA-4920/2	400-2000	2	25°	2.5 - 7.4	68	2.5"	7.5 / 3.4
WDA-1220	1200-2000	1	25°	5 - 7	36	2.5"	4.5 / 2.05
WDA-1220/2	1200-2000	2	65°	> 0	36	2.5"	4.9 / 2.2



WDA-2126



WDA-2245



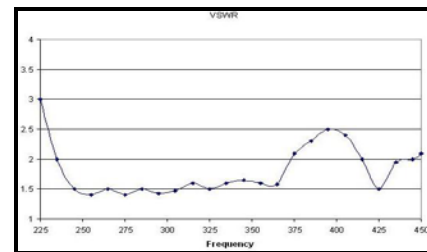
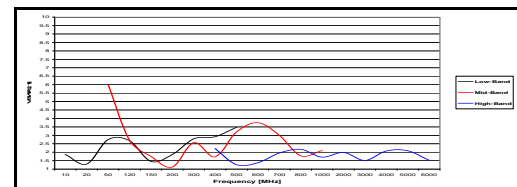
WDAs



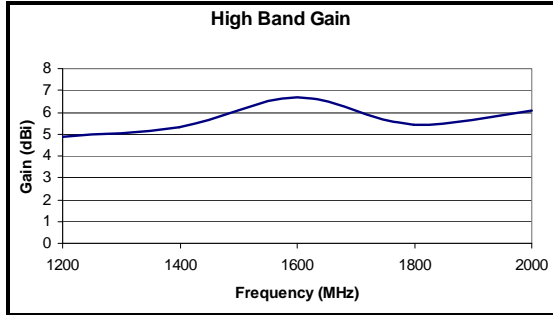
WDA-1220



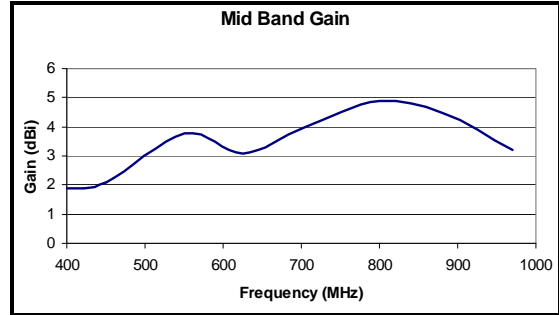
WDA-497



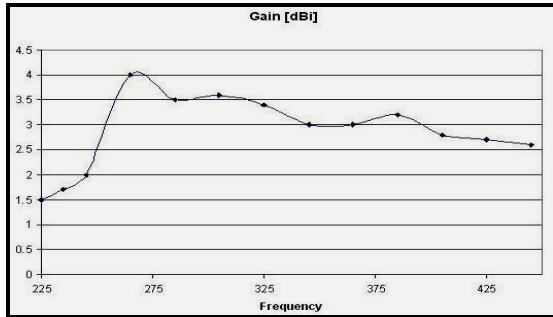
GAIN DATA:



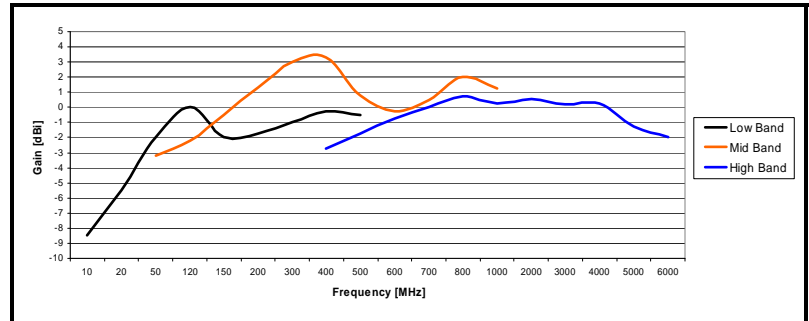
WDA-1220 Gain Data



WDA-497 Gain Data

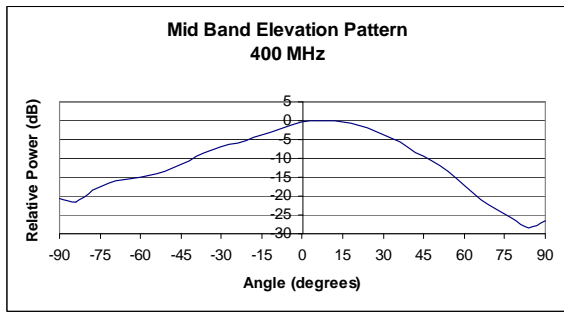


WDA-2245 Gain Data

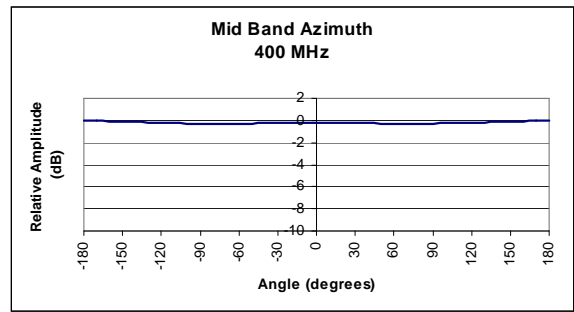


WDA-2126 Gain Data

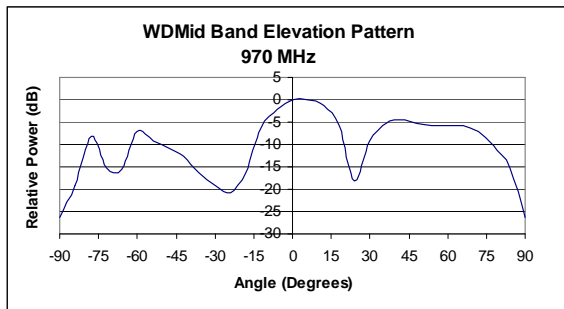
RADIATION PATTERNS:



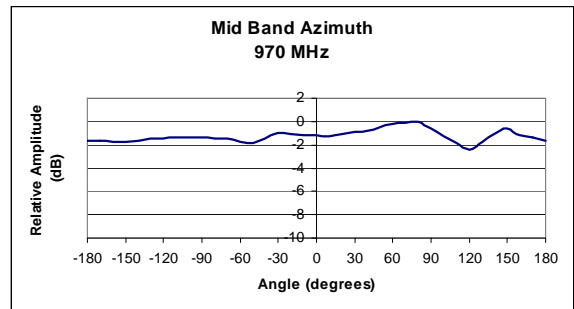
WDA-497 400MHz Elevation Pattern



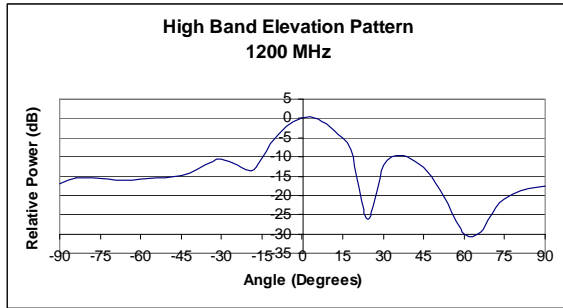
WDA-497 400MHz Azimuth Pattern



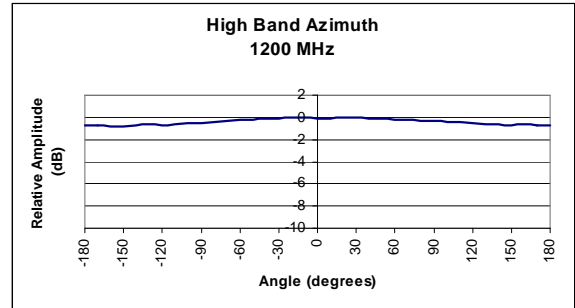
WDA-497 970MHz Elevation Pattern



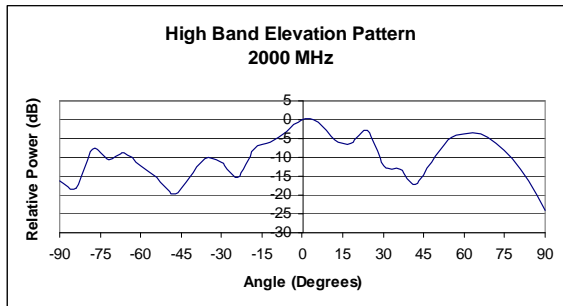
WDA-497 970MHz Azimuth Pattern



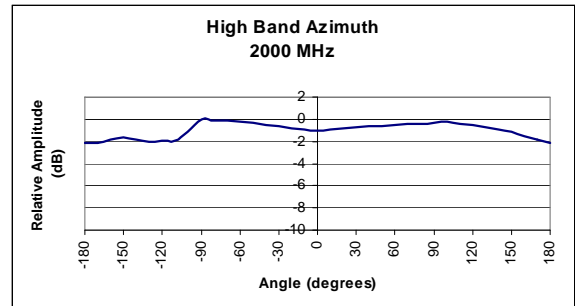
WDA-1220 1200MHz Elevation Pattern



WDA-1220 1200MHz Azimuth Pattern



WDA-1220 2000MHz Elevation Pattern



WDA-1220 2000MHz Azimuth Pattern

SPECIFICATIONS: Vertical Polarization Omnis

Model Number	Old Model Number	Frequency MHz	Peak** Gain dBi	Beam Tilt Degrees	RF Port	Size L x D (In)
OVP – 03	8825 – 800	220 - 350	0 - 3	0	N	15 x 21
OVP – 06	8825 – 810	500 - 600	0 - 3	0	N	15 x 10
OVP – 14-9	9540 – 800	1350 - 1450	0 - 6	+9	N	2.5 X 20



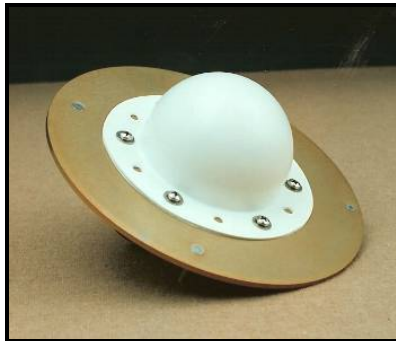
OVP – 14-9

SPECIFICATIONS: Vertical Polarization Omnis (Continued)

Model Number	Old Model Number	Frequency MHz	Peak** Gain dBi	Beam Tilt Degrees	RF Port	Size L x D (In)
OVP – 16	8852 – 815*	1500 - 1660	0 - 3	0	N	6 X 1.12
OVP – 22	8852 – 821*	2150 - 2350	0 - 3	0	N	6 x 1.12
OVP – 24	9529 – 800	2400 - 2500	6	0	N	16 x 2.5
OVP – 39	9356 – 800*	3700 - 4200	0 - 5.5	0	N	4.1 X 2
OVP – 50	9845 – 800*	4000 - 6000	0 - 5	0	SMA	2 X 4
OVP – 47**	ODA 42-44/N	4400 - 5000	10	0	N	25 x 3.2
OVP – 48	9143 – 800*	4400 - 5000	0 - 3	0	N	2.5 x 1.6
OVP – 56	0043 – 830*	5250 - 5850	3	0	SMA	3 x 2 x 5
OVP – 55	0043 – 840*	5250 - 5850	0.3	0	SMA	3 x 2 x 5
OVP – 95	9143 – 820*	9300 - 9800	6	0	N	2.50 x 1.6
OVP – 224	9643 – 800	21200 - 23600	6	0	WR-42	2.38 x 6.5
OVP – 245	9069 - 810	24000 - 25000	4	0	SMA	1.0 x 0.5

* For Airborne Applications.

** Optimized to radiate on the horizon.



OVP – 39



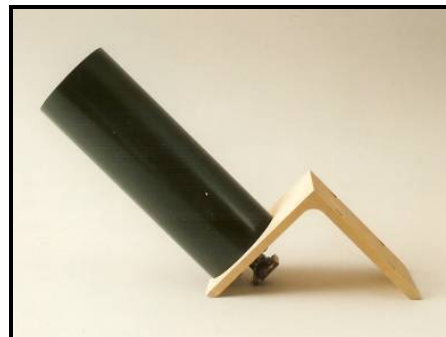
OVP – 50



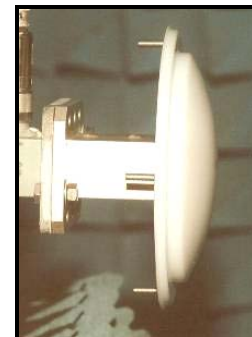
OVP – 55



OVP – 48



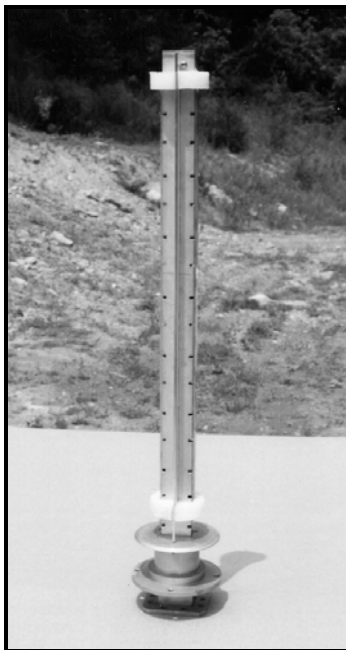
OVP – 224



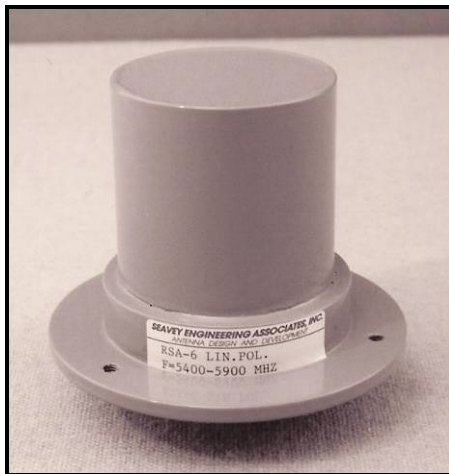
OVP – 16

SPECIFICATIONS

Model Number	Frequency MHz	Gain dBi	Beam Tilt Degrees	RF Port	Size D x L (in)
RSA – 1	950 – 1220	3	0	N	2.38 x 7.5
RSA – 2A	1650 – 1750	3	0	N	2.38 x 5.0
RSA – 2	1900 – 2350	3	0	N	2.38 x 4.5
RSA – 3	2900 – 3300	3	0	N	2.38 x 6.3
RSA – 6	5400 – 5900	3	0	N	2.00 x 2.5
RSA – 59-11/8	5725 – 5875	11	+8	CPR159	2.38 x 24
RSA – 59-11	5725 – 5875	11	0	CPR159	2.38 x 24
RSA – 64-8	6360 – 6420	8	0	N	0.63 x 9
RSA – 64-11	6300 – 6450	11	0	CPR137	2.38 x 24
RSA – 64-11/8	6392 – 6452	11	+8	CPR137	2.38 x 24
RSA – 10	9300 – 9600	3	0	N	2.00 x 2.5



RSA – 59 – 11



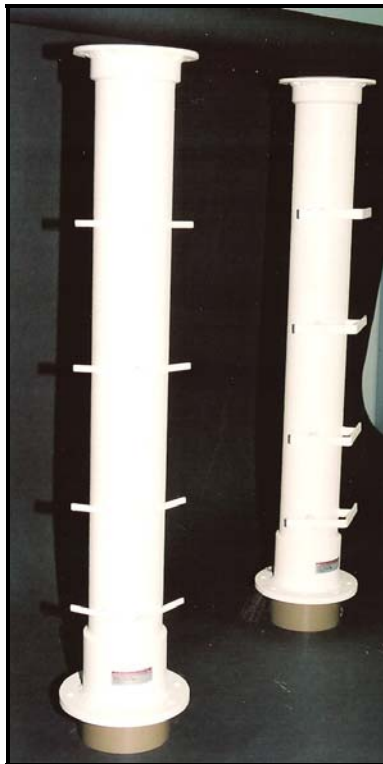
RSA – 6



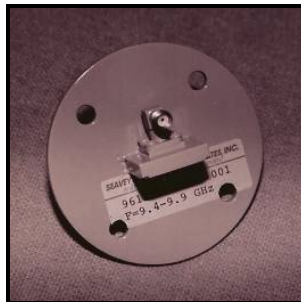
RSA – 59 – 11/8

SPECIFICATIONS: Horizontal Polarization Omnis

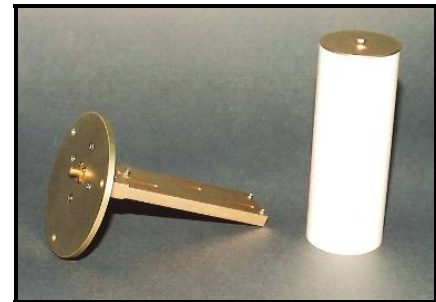
Model Number	Old Model Number	Frequency MHz	Gain dBi	Beam Tilt Degrees	RF Port	Size L x D (in)
STA – 5488/A	STA – 5488/A	54 – 88	2.5	0	N – f	9' x 7'
STA – 8813/A	STA – 8813/A	88 – 130	2.5	0	N – f	7' x 4.5'
STA – 1521/A	STA – 1521/A	150 – 216	2.5	0	N – f	5' x 3.5'
STA – 4770/A	STA – 4770/A	470 – 700	2.5	0	N – f	24" x 18"
STA – 7010/A	STA – 7010/A	700 – 1000	2.5	0	N – f	18" x 12"
OHP – 19	9463 – 810	1850 – 1950	0 - 3	0	N	6" x 7"
OHP – 58	9461 – 800	5725 – 5975	0 - 4	0	SMA	2.38 x 6.5
OHP – 95 – 6	9663 – 800	9000 – 10000	0 - 5	+6	SMA	1.05 x 1.6
OHP – 97 – 33	9612 – 800	9400 – 9900	0 - 2	+33	SMA	1.0 x 1.3
OHP – 282	9726 – 810	28150 – 28370	10	-1	WR-28	2.38 x 8.6
OHP – 09	RSA – 9H	902 – 928	9	0	7/16 DIN	56 x 5.5



OHP – 09



OHP – 97-33



OHP – 58



OHP – 282



OHP – 19