

## ANT150D, D3, D6-9 DIPOLE AND DIPOLE ARRAY 1 TO 9 dBd

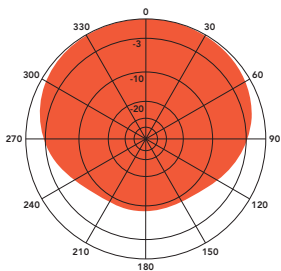
The Telewave ANT150D series consists of single, dual, and 4-element dipole array antennas with a precision phasing harness for optimum performance. The horizontal pattern is field-adjustable for any current or future coverage requirements. The wide bandwidth and high efficiency of these antennas make them ideal for applications including trunking, business, public safety, and amateur radio.

Each dipole element is constructed with 6061-T6 aluminum, and welded at the base for maximum strength. Each element is also completely sealed with our high-tech Txylan™ coating, which resists water and ice

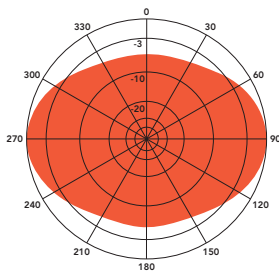
buildup, and provides exceptional protection from corrosive gases, UV radiation, salt spray, acid rain and windblown abrasives. The phasing harness is fully sealed by Telewave's Millennium Seal™ technology.

All components are at DC ground potential for lightning protection. Each dipole element includes a heavy-duty custom clamp set for mounting to a 1.5"-2.5" diameter galvanized steel support pipe or tower leg.

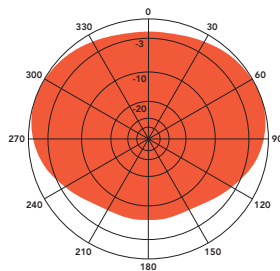
Up to 15 degrees of electrical uptilt or downtilt may be specified for D3 or D6-9 models. Desired tilt angle must be included with the order, and consultation with our antenna engineering staff is requested.



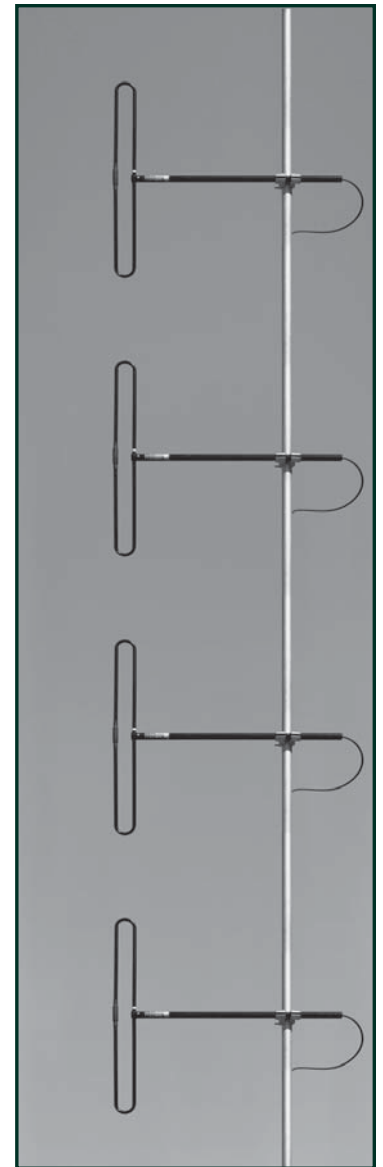
H-Plane: Gain 9.1 dBd  
1/4 wl. spacing from tower



H-Plane: Gain 9.1 dBd  
1/2 wl. spacing from tower



H-Plane: Gain 8.5 dBd  
3/8 wl. spacing from tower



ANT150D6-9  
(Harness not shown)  
Support mast is customer-supplied

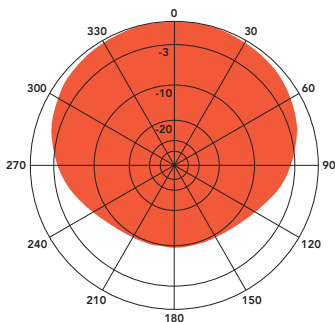
COMMON SPECIFICATIONS			
Frequency (continuous)	138-174 MHz	Lightning protection	DC Ground
Power rating (typ.)	500 watts	Wind rating	175 MPH
Impedance	50 ohms	(with 0.5" ice)	150 MPH
VSWR	1.5:1 or less		
Pattern	Adjustable: Offset circular, cardioid, or bidirectional		
Termination	N-Male or 7-16 DIN (opt.) on harness feed cable		
MODEL	ANT150D	ANT150D3	ANT150D6-9
Gain (dependent on pattern)	1-2.5 dBd	3-6 dBd	6-9 dBd
Vertical beamwidth (3/8 wl.)	78°	37°	18°
Dimensions (H x D) max.	34 x 36 in.	89 x 36 in.	195 x 36 in.
Weight (antenna + clamps)	5 lb.	13 lb.	28 lb.
Maximum exposed area	0.73 ft. <sup>2</sup>	1.6 ft. <sup>2</sup>	3.3 ft. <sup>2</sup>
Lateral thrust at 100 MPH	29 lbs	64 lbs	134 lbs
Electrical uptilt or downtilt	N/A	1-15°	1-15°

# DIPOLE PATTERN ADJUSTMENT

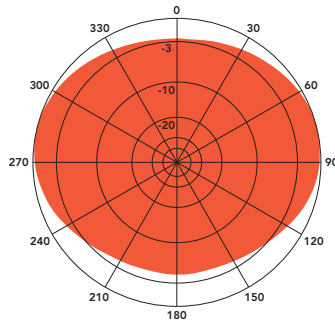


Telewave folded dipoles are field adjustable to provide different horizontal patterns and gain values. The horizontal spacing from tower between the dipole and the support mast or tower leg controls this adjustment. Review the patterns below to determine which is best suited to your range area requirements. Use the chart on the next page to find the appropriate dimension for antenna to mast spacing. The drawing at the bottom shows how this measurement is made and the vertical spacing to be used for multi-element arrays.

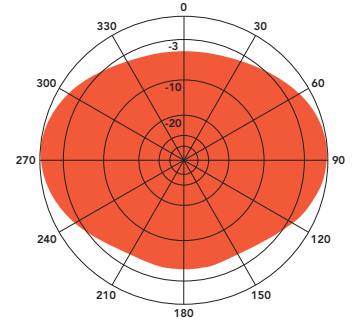
## Horizontal radiation patterns



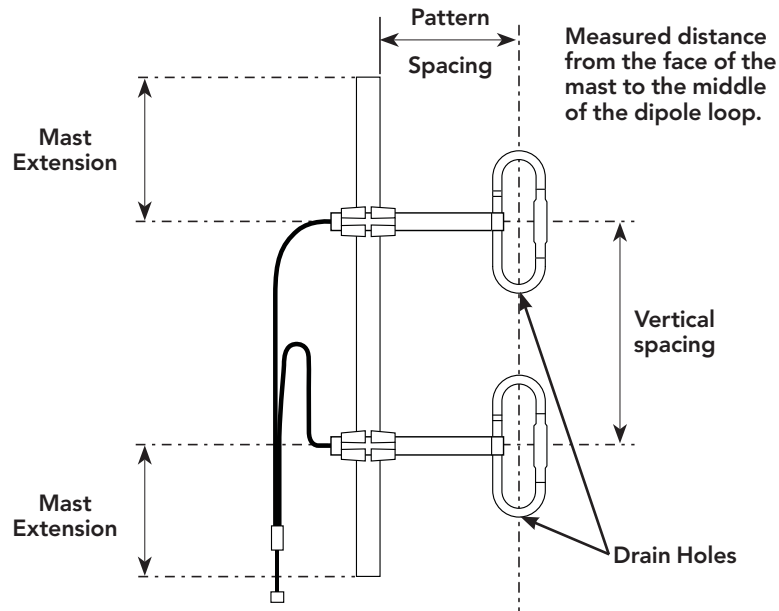
**Offset Circular**  
1/4 wavelength spacing



**Cardioid**  
3/8 wavelength spacing



**Bi-directional**  
1/2 wavelength spacing



**IMPORTANT:** Be sure that the drain holes are on the bottom when the elements are installed.

# DIPOLE PATTERN ADJUSTMENT

## DIPOLE MOUNTING AND MAST SPECIFICATIONS

Mast lengths shown are minimum acceptable lengths to insure proper pattern control. Mast extension is applied at top and bottom of array. Longer masts are acceptable, but the dipole or array must be centered on the support to prevent beam tilt. The clamps provided with the dipoles will work properly to attach the dipole boom to a mast that is between 1.5 to 2.5 inches in diameter. To attach to smaller supports (1-1.5" diameter), use ANTS420 shims. This allows direct mounting to small towers such as the Rohn 25 and 45.

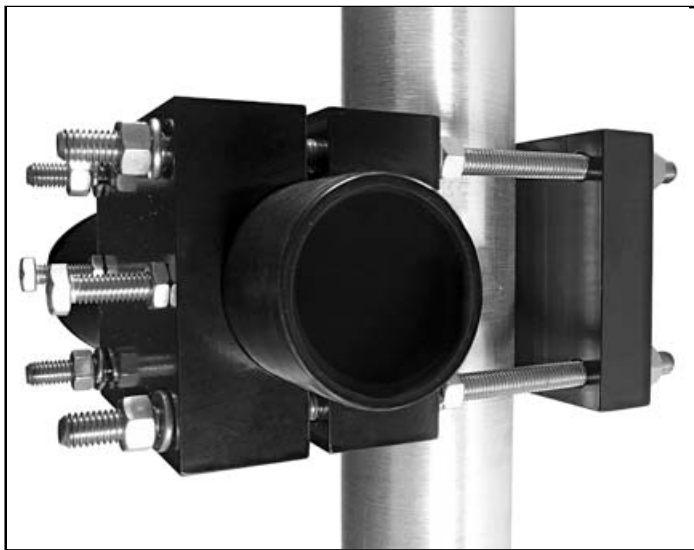
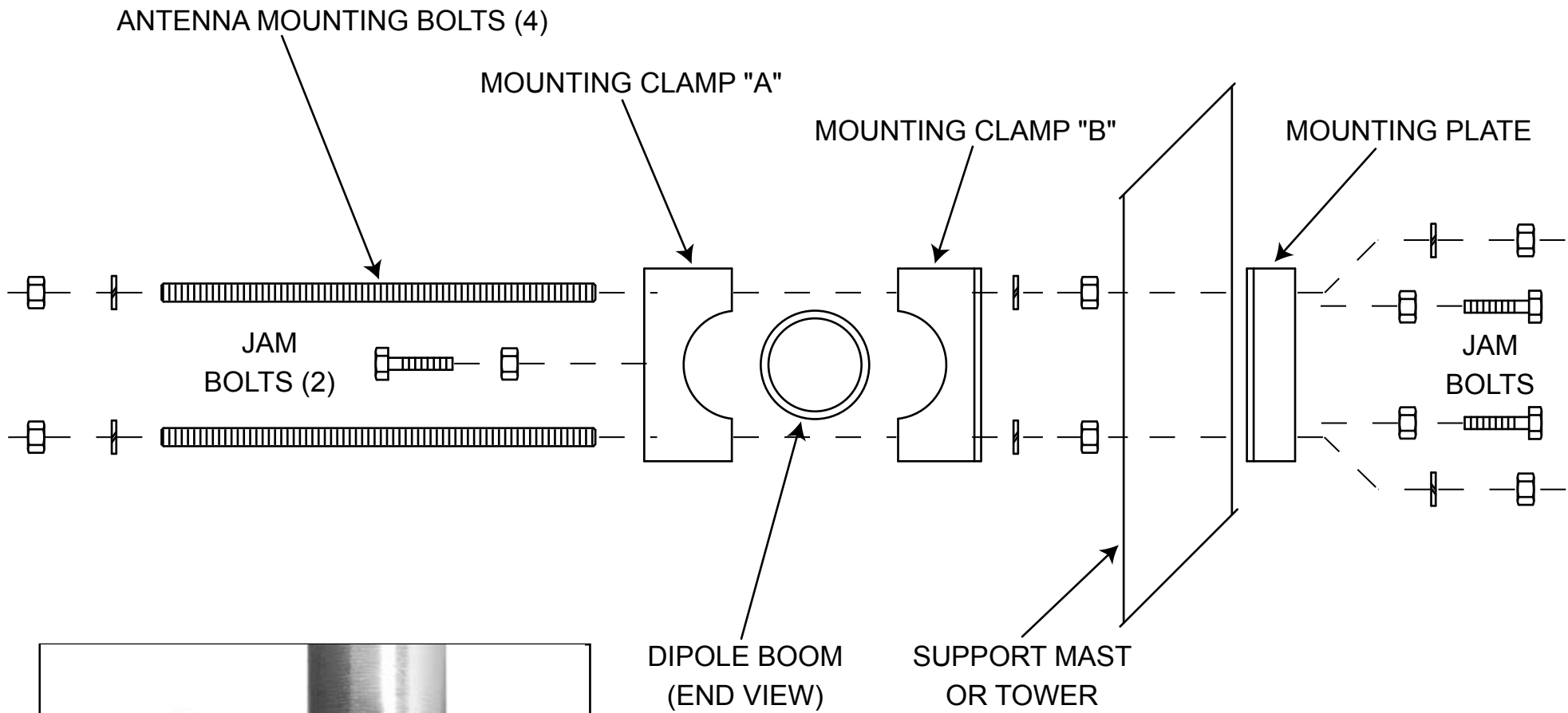
### MAST MINIMUM LENGTH AND ELEMENT VERTICAL SPACING (at midband)

ANTENNA	MAST LENGTH	MAST EXTENSION	VERTICAL SPACING	MINIMUM MAST TYPE
ANT37D				
ANT40D	CONTACT TELEWAVE FOR MOUNTING ADVICE			
ANT50D				
ANT70D	6'-7"	3'-3.5"	N/A	2.0" Schedule 40 Galvanized Pipe
ANT75D	6'-7"	3'-3.5"	N/A	2.0" Schedule 40 Galvanized Pipe
ANT75D3	15'-3"	4'-1"	9'-7"	2.0" Schedule 40 Galvanized Pipe
ANT90D	5'-6"	2'-9"	N/A	2.0" Schedule 40 Galvanized Pipe
ANT90D3	12'-2"	2'-9"	7'-5"	2.0" Schedule 40 Galvanized Pipe
ANT120D	4'-2"	2'-1"	N/A	1.5" Schedule 40 Galvanized Pipe
ANT120D3	10'	2'-1"	6'-2"	2.0" Schedule 40 Galvanized Pipe
ANT120D6-9	21'	15"	6'-2"	2.0" Schedule 40 Galvanized Pipe
ANT150D	3'	18"	N/A	1.5" Schedule 40 Galvanized Pipe
ANT150D3	7'-5"	18"	4'-5"	1.5" Schedule 40 Galvanized Pipe
ANT150D6-9	16'-3"	18"	4'-5"	2.0" Schedule 40 Galvanized Pipe
ANT150D7-12	33'-11"	18"	4'-5"	2.0" Schedule 40 Galvanized Pipe
ANT220D	2'-4"	14"	N/A	1.5" Schedule 40 Galvanized Pipe
ANT220D3	5'-1"	14"	3'-1.5"	1.5" Schedule 40 Galvanized Pipe
ANT220D6-9	11'-5"	14"	3'-1.5"	1.5" Schedule 40 Galvanized Pipe
ANT275D	2'	12"	N/A	1.5" Schedule 40 Galvanized Pipe
ANT275D3	4'-8"	12"	2'-8"	1.5" Schedule 40 Galvanized Pipe
ANT275D6-9	10'	12"	2'-8"	1.5" Schedule 40 Galvanized Pipe

### ELEMENT HORIZONTAL SPACING FROM TOWER (at midband)

MODEL	1/4 wl. OFFSET CIRCULAR	3/8 wl. CARDIOID	1/2 wl. BI-DIRECTIONAL
ANT37D	6'-3"	N/A	N/A
ANT40D	5'-9"	N/A	N/A
ANT50D	4'-7"	6'-11"	N/A
ANT70D	3'-3"	5'	MAX EXTENSION
ANT75D, D3	3'	4'-6"	MAX EXTENSION
ANT90D, D3	2'-4"	3'-6"	4'-9"
ANT120D, D3, D6-9	22"	2'-9"	3'-9"
ANT150D, D3, D6-9, D7-12	18"	2'-3"	3'
ANT220D, D3, D6-9	12"	18"	2'
ANT275D, D3, D6-9	10"	15"	20"

**NOTE:** The physical characteristics of large dipoles require a correction factor from calculated values for mast spacing. The dimensions in the above table include this correction.



**TELEWAVE, INC.**

DIPOLE MOUNTING DIAGRAM  
ANT70D-75D-90D

TWDS-7064 Rev. 9/08

# FOLDED DIPOLE ANTENNAS 138-825 MHz

## MOUNTING INSTRUCTIONS

### WARNING:

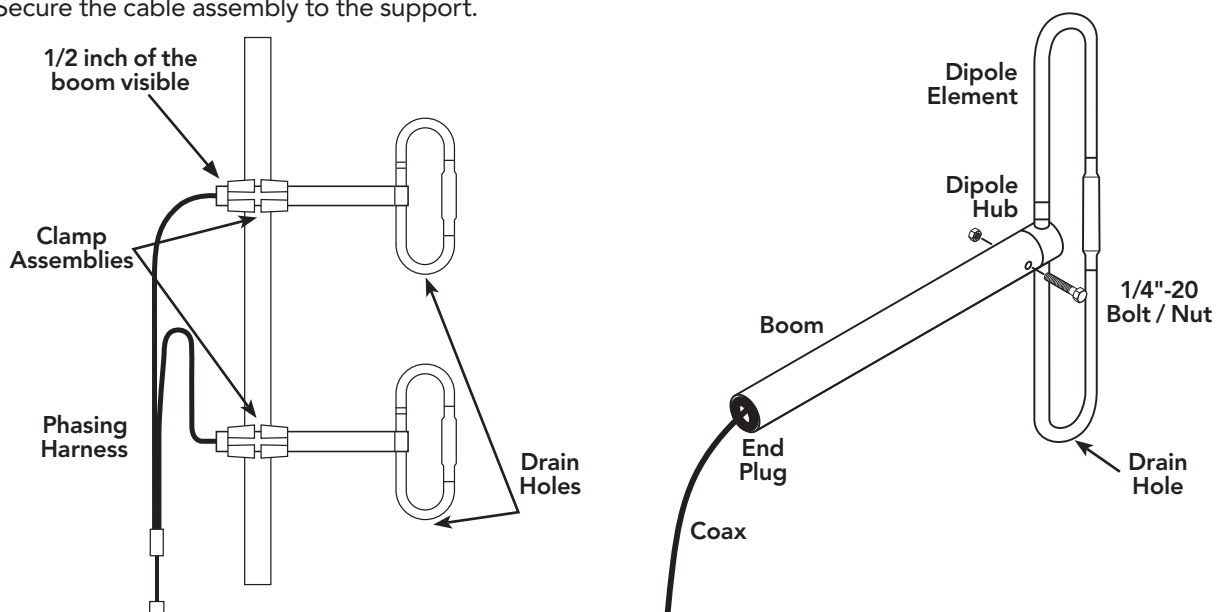
For your safety, do not install any antenna near power lines, and carefully follow all installation instructions. If the antenna falls toward or contacts any overhead wires, immediately let go and stay away. Call the utility company for assistance. Always use safety devices for tower climbing. Ensure that the tower structure is well grounded for lightning protection.

### PARTS LIST (for single dipole element):

(1)	Dipole and clamp set	(1)	1/4"-20 hex bolt	(1)	1/4"-20 lock nut
(2)	3/8" x 3.5" hex bolt	(2)	3/8" hex nut	(2)	3/8" split lock washer
(1)	Anti-seize compound				

### ASSEMBLY INSTRUCTIONS

1. Remove components from shipping box and lay out the dipole and cable assemblies, ideally in a large, sheltered area. Arrange the assemblies in order as cable lengths allow.
2. Refer to the diagram. Slide the boom over the dipole hub, and align the holes in the boom with the holes in the hub. Apply anti-seize compound to the bolt end, then install and tighten the 1/4"-20 bolt and lock nut. Press the end plug located on the dipole feed cable into the end of the boom until it is firmly seated.
3. Refer to the appropriate Dipole Pattern Adjustment sheet for the frequency range of the antenna. Using the chart titled "Dipole Mounting and Mast Specifications", measure and mark the support structure for the proper dipole element spacing. Mount each dipole assembly to the mast with clamps as shown in the diagram. Locate the drain hole on each element, and be certain it is pointing down.
4. Refer to the chart titled "Mast to Dipole Dimensions", and determine the proper horizontal element spacing from the mast or support structure for the desired coverage pattern. **At least 1/2 inch of the boom should be visible on the back side of the clamps.**
5. Apply anti-seize compound to the bolt ends, then secure the dipole assemblies to the support with the supplied 3/8" nuts, washers and bolts, while adjusting each dipole position on the support. Tighten each nut until the lock washer is flat, then add 1/2 turn. Be sure to properly seal the input connector with waterproof tape or other sealing material. See Telewave TWDS-0502 for a recommended method of connector sealing.
6. Secure the cable assembly to the support.



# SECTION 7

## ANTENNAS

### BASE STATION ANTENNAS - 33-405 MHz

#### DIPOLES AND DIPOLE ARRAYS 500 WATTS ADJUSTABLE PATTERNS

Standard connector is N-Male on a pigtail\*. 7-16 DIN available (additional cost). All dipoles and arrays are field-configurable and UPS shippable (except 37D, 40D, 42D, 50D), and include clamps for mounting to an existing mast or other support. One support boom with clamps is included with models from 33-48 MHz. 2 and 4 bay arrays can be ordered with up to 15 degrees of electrical uptilt or downtilt.

MODEL	FREQ. RANGE	BAYS	GAIN	INSTALLED HEIGHT	SHIP WEIGHT	LIST PRICE
ANT37D*	33.5-41 MHz	1	1 to 2.6 dBd	145"	80 lb	\$2,214.68
ANT40D*	37-45 MHz			129"	74 lb	\$2,194.50
ANT42D*	38.5-47 MHz			126"	55 lb	\$1,900.56
ANT44D*	41.5-48 MHz			120"	46 lb	\$1,894.60
ANT50D	45-54 MHz			108"	69 lb	\$2,296.80
ANT70D	63-78 MHz	1	1 to 2.6 dBd	76"	36 lb	\$1,023.00
ANT75D	66-88 MHz			72"	30 lb	\$1,023.00
ANT90D	88-108 MHz	1	1 to 2.6 dBd	56"	27 lb	\$1,023.00
ANT120D	110-138 MHz			45"	9 lb	\$433.40
ANT150D	138-174 MHz	1	1 to 2.6 dBd	34"	8 lb	\$403.70
ANT150D3		2	3 to 6 dBd	91"	21 lb	\$821.70
ANT150D6-9		4	6 to 9 dBd	205"	34 lb	\$1,404.70
ANT150D7-12		8	7 to 12 dBd	433"	68 lb	\$2,807.20
ANT220D		216-252 MHz	1	1 to 2.6 dBd	23"	8 lb
ANT220D3	2		3 to 6 dBd	61"	20 lb	\$730.40
ANT220D6-9	4		6 to 9 dBd	137"	32 lb	\$1,444.30
ANT220D7-12	8		7 to 12 dBd	300"	64 lb	\$2,884.20
ANT275D	230-330 MHz	1	1 to 2.6 dBd	19"	8 lb	\$443.30
ANT275D3		2	3 to 6 dBd	51"	18 lb	\$744.70
ANT275D6-9		4	6 to 9 dBd	115"	30 lb	\$1,420.10
ANT275D7-12		8	7 to 12 dBd	220"	60 lb	\$2,840.20
ANT350D	300-360 MHz	1	1 to 2.6 dBd	17"	7 lb	\$430.10
ANT350D3		2	3 to 6 dBd	44"	16 lb	\$730.40
ANT350D6-9		4	6 to 9 dBd	98"	27 lb	\$1,259.50
ANT350D7-12		8	7 to 12 dBd	178"	54 lb	\$2,520.10
ANT375D	345-405 MHz	1	1 to 2.6 dBd	15"	7 lb	\$319.00
ANT375D3		2	3 to 6 dBd	39"	15 lb	\$752.40
ANT375D6-9		4	6 to 9 dBd	87"	25 lb	\$1,259.50
ANT375D7-12		8	7 to 12 dBd	161"	50 lb	\$2,520.10

\* 8 bay arrays terminate with N-Female or DIN-F on power divider. ANT37D, 40D, 42D, and 50D ship via truck.