

C-, X-, or Ku-Band Capabilities

4.5 Meter Earth Station Antennas

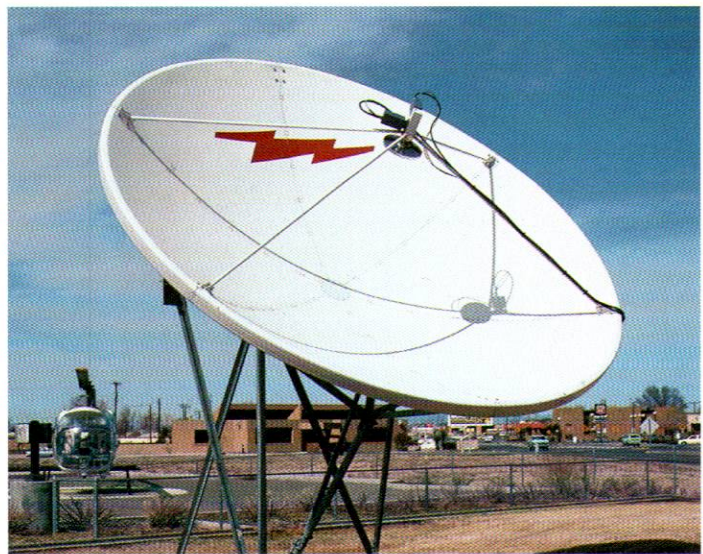
Now communications system integrators and designers can bring their systems on line faster, more economically, and with superior performance with the Andrew 4.5-meter Earth Station Antenna (ESA). In use around the world in high-density data, voice, communications networks, and broadcast applications, the Andrew 4.5-meter ESA features an exclusively designed 2- or 4-port prime focus, beam-shaping feed and ground plane configuration. This combination provides extremely accurate surface contour, exceptionally high gain, superior efficiency, and closely controlled pattern characteristics. The antenna is versatile, and can be configured for transmit/receive as well as receive-only, and for either linearly- or circularly-polarized C-Band, linearly-polarized Ku-Band, Hybrid C-/Ku-Band, or X-Band operation. Both pedestal and tripod mount types are available (motorization for pedestal only).

Andrew 4.5-meter ESAs feature exceptionally easy and accurate assembly. When using our optional hoisting kit no crane is necessary for installation. Additionally, the main reflector requires no special field alignment.

Andrew ESAs provide maximum durability with minimal maintenance. The hot-dipped galvanized steel ground mount assembly ensures extended product life. Galvanized and stainless steel hardware maximize corrosion resistance. For cost effective system expansion, available modular equipment options include anti-icing equipment and pressurization systems. Microprocessor steptrack control and motorizable mount options are also available.

Features:

- High Gain, Excellent Pattern Characteristics
- Main Reflector—No special Field Alignment
- 3-year Warranty on All Structural Components



Compliances:

- INTELSAT E-2, E-1, F-1,G
- U.S. FCC regulation 25.209
- ITU-R, S.580-4 and S.465-5
- Approved for use in the territory of Russia by the Ministry of Communications of the Russian Federation (Reference: Homologation Certificate No OC/I-A - ϕ -1)

**ANDREW**[®]

Electrical

Operating Frequency Band	
<i>C-Band Receive</i>	3.400-4.2 GHz
<i>C-Band Transmit</i>	5.850-6.725 GHz
<i>X-Band Receive</i>	7.25-7.75 GHz
<i>X-Band Transmit</i>	7.90-8.40 GHz
<i>Ku-Band Receive</i>	10.7-13.25 GHz
<i>Ku-Band Transmit</i>	13.75-14.8 GHz

Gain, with two port linear combiner (dBi, ±0.2 dB)			
<i>Rx Frequency</i>	<i>Rx Gain</i>	<i>Tx Frequency</i>	<i>Tx Gain</i>
3.400 GHz	42.4	5.850 GHz	46.0
3.625 GHz	42.8	6.175 GHz	46.3
4.000 GHz	43.9	6.425 GHz	46.6
4.200 GHz	44.2	6.725 GHz	47.0
7.250 GHz	48.4	7.90 GHz	49.2
7.500 GHz	48.7	8.15 GHz	49.5
7.750 GHz	49.0	8.40 GHz	49.8
10.700 GHz	51.4	13.75 GHz	53.2
10.950 GHz	51.6	14.00 GHz	53.4
11.950 GHz	52.4	14.25 GHz	53.6
12.750 GHz	52.9	14.50 GHz	53.7
13.25 GHz	53.2	14.80 GHz	53.8

Polarization
Linearly- or Circularly-Polarized

Polarization Discrimination, (Linearly-Polarized):
>35 dB on axis

Voltage Axial Ratio, C-Band, circularly-polarized with 2-port combiner
C-Band, <1.09:1 on axis, Tx
<1.20:1 on axis, Rx
X-Band, <1.20:1 on axis, Tx and Rx

Beamwidth, Mid-band, Degrees	C-Band	X-Band	Ku-Band
<i>3 dB Receive (Transmit)</i>	1.22 (0.85)	0.66 (0.61)	0.40 (0.85)
<i>15 dB Receive (Transmit)</i>	2.47 (1.90)	1.40 (1.29)	0.84 (0.67)

Antenna Noise Temperature - under clear sky conditions, at 68°F (20°C), at the circular waveguide flange of the feed.

<i>Elevation</i>	<i>Kelvin (C-Band)</i>	<i>Kelvin (X-Band)</i>	<i>Kelvin (Ku-Band)</i>
10°	44	45	53
30°	32	34	41
50°	28	29	38

Antenna VSWR, Transmit and Receive <1.3:1

Typical Shipping Information

Shipping weight, typical	
<i>4.5m (P, MP, MPJ Types)</i>	6000 lb
<i>4.5m (T Types) Tripod</i>	5600 lb
Shipping Volume (typical)	690 ft ³ (19.5m ³)
Shipping Container	
<i>4.5m (P, MP, MPJ Types)</i>	
Quantity 2	Standard 20 ft land/sea container
Quantity 4	Standard 40 ft land/sea container
<i>4.5m (T Types)</i>	
Quantity 2	Standard 20 ft land/sea container
Quantity 4	Standard 40 ft land/sea container



ANDREW®

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G/T Performance (C-Band)

LNA/LNB Noise Temperature	65K	45K	30K
ES45 G/T at 10° EL (dB/K)	23.4	24.3	25.0

Based on a 2-port, linearly-polarized antenna configuration at 4 GHz and at 10° elevation under clear sky conditions.

G/T Performance (X-Band)

LNA/LNB Noise Temperature	50K	75K	100K
ES45 G/T at 10° EL (dB/K)	28.1	27.2	26.5

Based on a 2-port, linearly-polarized antenna configuration at 7.50 GHz and at 10° elevation under clear sky conditions.

G/T Performance (Ku-Band)

LNA/LNB Noise Temperature	165K	125K	90K
ES45 G/T at 10° EL (dB/K)	29.1	29.9	30.8

Based on a 2-port, linearly-polarized antenna configuration at 12 GHz and at 10° elevation under clear sky conditions.

Uplink EIRP Capability (C-Band)

HPA Output (Watts)	25	125	500
Uplink EIRP (dBW)	60.5	67.5	73.5

Based on a 2-port antenna configuration at 6.175 GHz and 0 dB allowance for waveguide (IFL) loss between the HPA and the antenna.

Uplink EIRP Capability (X-Band)

HPA Output (Watts)	25	100	400
Uplink EIRP (dBW)	63.3	69.3	75.3

Based on a 2-port antenna configuration at 8.15 GHz and 0 dB allowance for waveguide (IFL) loss between the HPA and the antenna.

Uplink EIRP Capability (Ku-Band)

HPA Output (Watts)	25	125	500
Uplink EIRP (dBW)	60.5	67.5	73.5

Based on a 2-port antenna configuration at 14.25 GHz and 0 dB allowance for waveguide (IFL) loss between the HPA and the antenna.

Mechanical

Feed Type	Prime Focus
Reflector Material	Precision-Formed Aluminum
Reflector Segments	6
Mount Type	EI over AZ, Manual Tripod or Pedestal

Antenna Pointing Range, Pedestal Mount Coarse/(Continuous)	
<i>Elevation</i>	0-90° (90°)
<i>Azimuth</i>	180° (120°)

Antenna Pointing Range, Tripod Mount Coarse/(Continuous)	
<i>Elevation (Standard)</i>	2-62° (15°)
<i>Elevation (Extended)</i>	33-90° (15°) optional
<i>Azimuth</i>	164° (15°)

Wind Loading, Survival
125 mph (200 km/h) in any position of operation

Wind Loading, Operational (Pedestal motorized)
45 mph (72 km/h), gusting to 65 mph (105 km/h) (motor drives)

Temperature, Operational -40° to 125°F (-40° to 52°C)

Rain 4 in (102 mm) per hour

Solar Radiation 360 BTU/hr/ft² (1135 Watts/m²)

Relative Humidity 100%

Shock and Vibration As encountered by commercial air, rail and truck shipment

Atmospheric Conditions Moderate coastal/industrial areas. Severe conditions require additional protection.

Pedestal/Tripod Slab Foundation Information

Soil Bearing Capacity	2000 lb/ft ² (9770 kg/m ²)
Reinforcing Steel	284 lb (129 kg)
Concrete Compressive Strength	3000 lb/in ² (211 kg/cm ²)
Foundation Size:	
<i>Length</i>	10.0 ft (3.05 m)
<i>Width</i>	10.0 ft (3.05 m)
<i>Depth</i>	1.5 ft (0.5 m)
Concrete Volume	5.56 yd ³ (4.25 m ³)

Note: Other typical foundation designs are available.