

C-, X-, Ku-, or K-Band Capabilities

4.6 Meter Dual-Reflector Earth Station Antennas

Now communications system integrators and designers can bring their systems on line faster, more economically, and with superior performance with Andrew 4.6-meter Earth Station Antenna (ESA). In use around the world in high-density data, voice, communications networks, and broadcast applications, the Andrew 4.6-meter ESA features uniquely formed dual reflector Gregorian system coupled with close-tolerance manufacturing techniques. This combination provides extremely accurate surface contour, exceptionally high gain, superior efficiency, and closely controlled pattern characteristics.

Our wide selection of type-approved antennas speeds system commissioning. The Andrew 4.6 Type Approved ESA can be deployed in the field with minimal testing of G/T to become fully certified as an INTELSAT standard E-2, or F-1 station.

The 2-port C-Band Circular R/T feed system is manually field switchable from circular to linear polarization. The 48 inch (1219 mm) diameter by 24 inch (610 mm) equipment enclosure with doors allows hub mounting of LNA systems.

Andrew ESA's 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
- Gregorian Optics
- Self-Aligning Main Reflector—No Field Alignment
- Field Changeable Feed System, C-Band, circular to linear
- 3-year warranty on all structural components

Type Approvals and Compliances:

- INTELSAT (IA015A00) or (IA015B00), F-1, G
- INTELSAT (IA021A00) or (IA021B00), E2, G
- EUTELSAT
- ITU-R, S.580-4 and S.465-5
- U. S. FCC regulation 25.209 at Ku-Band
- ASIASAT
- APSTAR
- Approved for use in the territory of Russia by the Ministry of Communications of the Russian Federation (Reference: Homologation Certificate No OC/I-A -F-1)

Electrical

Operating Frequency Band

C-Band Receive	3.4-4.2 GHz
C-Band Transmit	5.850-6.725 GHz
X-Band Receive	7.25-7.75 GHz
X-Band Transmit	7.90-8.40 GHz
K- & Ku-Band Receive	10.7-13.25 GHz
Ku-Band Transmit	13.75-14.8 GHz
K-Band Transmit	17.3-18.4 GHz

Gain, with 2 port linear combiner (dBi, ±0.2dB)

Rx Frequency	Rx Gain	Tx Frequency	Tx Gain
3.400 GHz	42.4	5.850 GHz	47.8
3.625 GHz	43.2	6.175 GHz	48.2
4.000 GHz	44.2	6.425 GHz	48.6
4.200 GHz	44.6	6.725 GHz	48.7
7.250 GHz	49.5	7.90 GHz	50.0
7.500 GHz	49.7	8.15 GHz	50.2
7.750 GHz	49.9	8.40 GHz	50.6
10.700 GHz	52.2	13.75 GHz	54.6
10.950 GHz	52.5	14.00 GHz	54.8
11.950 GHz	53.5	14.25 GHz	54.9
12.750 GHz	53.9	14.50 GHz	55.0
		14.80 GHz	55.2
		17.30 GHz	55.3
		18.40 GHz	55.8

Polarization

C-Band is circular, (switchable to linear) or linear only;
X-Band is circular; Ku-Band is linear; K-Band is linear or circular

Polarization Discrimination, (Linearly-Polarized):

>35 dB across 1 dB beamwidth - C- or Ku-Band or K-Band

Voltage Axial Ratio, (Circularly-Polarized) across the 1 dB beamwidth

C-Band, <1.09:1 Tx
C-Band, <1.20:1 Rx
X-Band, <1.20:1 Tx and Rx

Beamwidth, Mid-band, Degrees	C-Band	Ku-Band	X-Band	K-Band
3 dB Receive (Transmit)	0.92 (0.63)	0.34 (0.29)	0.51 (0.47)	0.34 (0.23)
15 dB Receive (Transmit)	1.82 (1.21)	0.67 (0.54)	1.01 (0.93)	0.67 (0.43)

Antenna Noise Temperature - under clear sky conditions, at 68°F (20°C), with 2 port combiner.

Elevation	Kelvin (C-Band)	Kelvin (X-Band)	Kelvin (K & Ku-Band)
10°	43	48	52
30°	38	35	39
50°	36	33	37

Antenna VSWR*, Transmit and Receive <1.25:1

Typical Shipping Information

Shipping weight

4.6m (P, MP Types)	3739 lb (1721 kg)
4.6m (MPJ Types)	4513 lb (2047 kg)

Shipping Volume

	690 ft ³ (19.5m ³)
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Shipping container:

4.6m (P, MP Types)	4 per 40 ft standard container
4.6m (MPJ Types)	3 per 40 ft standard container

G/T Performance (C-Band)

LNA/LNB Noise Temperature	65K	45K	30K
ES46 G/T at 10° EL (dB/K)	23.3	24.1	24.7

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
ES46 G/T at 10° EL (dB/K)	29.7	28.7	27.9

Based on a 2-port, circularly-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
ES46 G/T at 10° EL (dB/K)	30.2	31.1	32.0

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

Mechanical

Feed Type	Dual-Reflector, Gregorian
Reflector Material	Precision-Formed Aluminum
Reflector Segments	8
Mount Type	EI over AZ, Pedestal

Antenna Pointing Range,	Coarse/(Continuous)
	Elevation 0-90° (90°)
	Azimuth 180° (120°)
	Polarization 180° (180°)

Hub/Enclosure Dimensions

Diameter	48 in (1.22 m)
Depth	24 in (0.61 m)

Wind Loading, Survival

125 mph (200 km/h) in any position of operation

Wind Loading, Operational

45 mph (72 km/h), (motor drives) gusting to 65 mph (105 km/h)

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

Typical Slab Foundation Information

Soil Bearing Capacity	2000 lb/ft ² (9.77 kg/m ²)
Reinforcing Steel	688 lb (312 kg)
Concrete Compressive Strength	3000 lb/in ² (211 kg/cm ²)
Foundation Size:	
Length	11.6 ft (3.5 m)
Width	11.6 ft (3.5 m)
Depth	1.5 ft (0.5 m)
Concrete Volume	7.35 yd ³ (5.62 m ³)



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