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4.6 M Earth Station Antenna

The Andrew 4.6 M earth station antenna system incorporates features and versatility unmatched in its class. The 4.6 M is capable of operation on all major satellite systems and is Type Approved on many global systems. Operation C-, X-, Ku- and K-bands are possible with the proper selection of feed and combiner systems. Wide selections of mounts are possible, from simple manual mounts to full tracking operation.

The 4.6 M exhibits the following features:

- Electrical performance meets or exceeds:
 - U.S. FCC regulation 25-209 for mandatory pattern requirements for 2E satellite spacing (Ku-Band).
 - ITU-R, S.580-4 and S.465-5 recommendations for pattern performance.
 - INTELSAT requirements for standards (C-Band), F-1, G, and D-1 type approved stations. (IA015A00, IA015AA0, IA015B00, IA015BA0)
 - INTELSAT requirements for standards (Ku-Band), E-2, E-1 and G type approved stations. (IA21A00, IA021AA0, IA021B00, IA021BA0)
 - All Ku-Band antennas meet EUTELSAT requirements for pattern and polarization discrimination.
 - Ministry of Communications of the Russian Federation (Homologation Certificate No. OC/1AΦ-1)
- Gregorian optics and fully shaped main reflector provides excellent pattern characteristics and high gain.
- Microprocessor or steptrack control options available for motorized antennas.
- Rugged aluminum and steel construction provides 125 mph (200 km/hr) wind survival, in any position.
- A large 48 inch (1219 mm) diameter by 24 inch (610 mm) deep equipment enclosure with a door for hub mounting of electronic systems.
- Self-aligning main reflector requires no field alignment.
- Installation without a crane using optional hoisting kits.
- Full operational temperature ranges -40° F to 125° F (-40°C to 52° C) standard.

Like all Andrew earth station antennas, the 4.6 M earth station provides high gain and exceptional pattern characteristics. The electrical performance and versatility provide the ability to configure the antenna with a choice of linearly polarized or circularly polarized 2- or 4- port combining networks.

Andrew provides a complete line of available options, including field installed electrical anti-icing heating, motor drive systems (with power interfaces addressing domestic and international standards), remote microprocessor motor drive system control, pressurization equipment, and interconnecting HELIAX® cables and waveguide.

Need links to the following:
 Typical Electrical Performance *Use the following chart.*

**TYPICAL ELECTRICAL SPECIFICATIONS
 2 PORT RECEIVE/TRANSMIT COMBINER**

Frequency Bands	C-Band	X-Band	Ku-Band	K-Band
Receive (GHz)	3.4-4.2	7.25-7.75	10.7-13.25	10.7-13.25
Transmit (GHz)	5.850-6.725	7.90-8.40	13.75-14.8	17.3- 18.4
Gain, Mid-Band				
Receive (dBi)	44.4	49.7	53.5	53.5
Transmit (dBi)	48.2	50.2	55.0	56.0
Receive Noise Temperature (K)				
10°	43E	48E	52E	52E
30°	38E	35E	39E	39E
50°	36E	33E	37E	37E

CERTIFICATIONS AND STATEMENTS OF COMPLIANCE

- Approved for use in the territory of Russia by the Ministry of Communications of the Russian Federation (Reference: Homologation Certificate NO. OC/1Aφ-1).
- All Ku-Band versions of the antenna are compliant with U.S. FCC regulations as defined in Section 25.209 for 2° satellite spacing.
- EUTELSAT requirements for pattern and polarization discrimination (K-Band).
- ITU-R S.580-4 and S.465-5 recommendations for pattern performance (formerly CCIR)
- INTELSAT type approved for standards C-Band, F-1, G, and D-1 stations.
- INTELSAT type approved for standards Ku-Band E-2, E-1 and G stations.
- EUTELSAT requirements for pattern and polarization discrimination.

Environmental conditions: *Use the following*

Environmental Conditions

Operating Temperature	-40° to 125°F (-40° to 52° C)
Wind Loading, Survival	125 mph (200 km/h) in any position of operation
Wind Loading, Operational	45 mph (72 km/h) gusting to 65 mph (105 km/H)
Seismic (Earthquakes)	1 G Vertical and Horizontal acceleration. Equivalent to a Richter Magnitude 8.3, and Grade 11 on the modified Mercalli Scale.
Rain	4 inches (102mm) per hour.
Solar Radiation	360 BTU/hr/ft ² (1135 Watts/m ²)
Relative Humidity	100%
Shock and Vibration	As encountered by commercial Air, Rail and Truck shipment.
Atmospheric Conditions	As encountered in a moderately corrosive coastal and industrial area.

Design Standards *use the following*

Design Standards

Material/Finish Reflector	Reflective Aluminum, conversion coated and painted with highly diffusive white paint.
Ground Mount	Hot-Dipped Galvanized Steel, per ASTM-A123 for structural steel.
Hardware	Sizes $\leq 3/8$ " (9.5mm), Stainless Steel, Passivated per MIL-F-14072-E300. Sizes $\geq 3/8$ " (9.5mm) Hot-Dipped Galvanized Steel per ASTM-A123.

Foundations *Use the following*

Foundation, Typical Slab

Soil Bearing Capacity	2,000 lb/ft ² (9,764 kg/m ²)
Reinforcing Steel	688 lbs (312 kg)
Concrete Compressive Strength	3,000 PSI (211 kg/cm ²)
Foundation Size: Length Width Depth Concrete Volume	11.6 ft (3.5 m) 11.6 ft (3.5 m) 1.5 ft (0.5 m) 7.35 yd ³ (5.62m ³)
Foundation Specifications	Bulletin 37846C Revision F
Typical Slab Foundation Drawing	240001

Shipping Information. *Use the following*

Typical Net Weight	1690 lb. (767 kg)
Typical Shipping Weight (P, MP Types)	3739 lb. (1721 kg)
Typical Shipping Weight (MPJ Types)	4513 lb. (2047 kg)
Typical Shipping Volume Shipping Container	690 ft ³ (19.5 m ³)
(P, MP Types)	Quantity 4 per Standard 40 ft land/sea container
(MPJ Types)	Quantity 3 per Standard 40 ft land/sea container

INTELSAT and EUTELSAT type approval Matrix *Use the following*

TYPE APPROVALS

4.6 METER ANTENNAS

(THE FOLLOWING ANTENNA ASSEMBLIES INCLUDE FEED SYSTEMS)

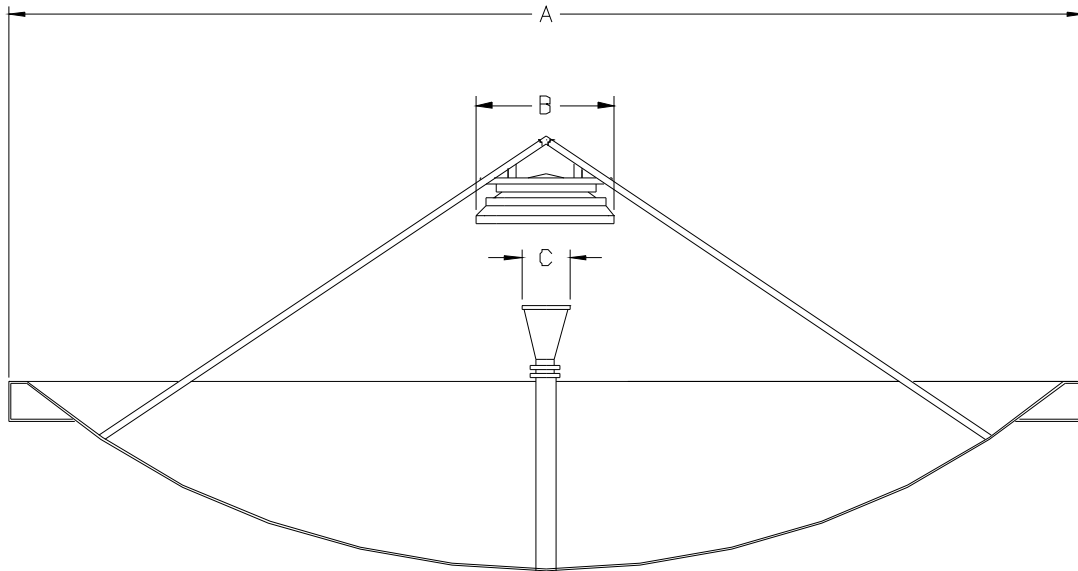
Type Number	INTELSAT Standard	Registration Number	C-Band	Ku-Band	Manual Mount	Motorizable With Struts	Motorizable with Jack Screws	2-Port Combiner	4-Port Combiner	LNA
ES46P-EC-1			●		●					0
ES46MP-EC-1			●			●				0
ES46MPJ-EC-1			●				●			0
ES46P-1				●	●					0
ES46MP-1				●		●				0
ES46MPJ-1				●			●			0
ES46-CCP2	F-1, D-1, G	IA015A00	●			●		●		0
ES46-CCP2-24	F-1, D-1, G	IA015AA0	●			●		●		1
ES46MP-CCP2	F-1, D-1, G	IA015A00	●			●		●		0

ES46MP-CCP2-24	F-1, D-1, G	IA015AA0	●			●		●		1	
ES46MPJ-CCP2	F-1, D-1, G	IA015AA0	●					●	●	0	
ES46MPJ-CCP2-24	F-1, D-1, G	IA015AA0	●					●	●	1	
ES46-CCP4	F-1, D-1, G	IA015B00	●		●					●	0
ES46-CCP4-24	F-1, D-1, G	IA015BA0	●		●					●	1
ES46MP-CCP4	F-1, D-1, G	IA015B00	●			●				●	0
ES46MPJ-CCP4-24	F-1, D-1, G	IA015BA0	●					●		●	2
ES46MPJ-CCP4	F-1, D-1, G	IA015B00	●					●		●	0
ES46MP-CCP4-24	F-1, D-1, G	IA015BA0	●			●				●	2
ES46MPJ-CCP4	F-1, D-1, G	IA015B00	●					●		●	0
ES46MPJ-CCP4-24	F-1, D-1, G	IA015BA0	●					●		●	1
ES46-124W	E-1, G	IA021A00			●	●				●	0
ES46-124W-24	E-1, G	IA021AA0			●	●				●	1
ES46MP-124W	E-1, G	IA021A00			●		●			●	0
ES46MP-124W-24	E-1, E-2, G	IA021AA0			●		●			●	1
ES46MPJ-124W	E-1, E-2, G	IA021A00			●			●	●		0

ES46MP-124W-24	E-1, E-2, G	IA021AA0		●		●		●		1
ES46MPJ-124W	E-1, E-2, G	IA021A00		●			●	●		0
ES46MPJ-124W-24	E-1, E-2, G	IA021AA0		●			●	●		1
ES46-4124W	E-1, G	IA021B00		●	●				●	0
ES46-4124W-24	E-1, G	IA021BA0		●		●			●	2
ES46MP-4124W	E-1, G	IA021B00		●		●			●	0
ES46MP-4124-24	E-1, E-2, G	IA021BA0		●		●			●	2
ES46MPJ-4124W	E-1, G	IA021B00		●			●		●	0
ES46MPJ-4124-24	E-1, E-2, G	IA021BA0		●			●		●	2

Energy Density Calculations *use the following*

Energy Density Calculations



A	Diameter of Reflector	15 ft (4.6 m)
B	Diameter of Sub-reflector (C-Band)	2.0 ft (0.48 m)
	Diameter of Sub-reflector (X-,Ku-Band)	1.57 ft (0.48 m)
C	Diameter of Feed Horn	
	C-Band	4.25 in (0.11 m)
	Ku-Band	7.66 in (0.17 m)
	X-Band	8.38 in (0.21 m)

Motorizable Mount Information

The versatile pedestal mount features 180° azimuth coverage in three continuous 120° overlapping ranges and 90° continuous elevation adjustment. This large range of adjustment provides non-critical foundation orientation and the ability to view geostationary satellites, horizon-to-horizon, from any location, worldwide.

The motorizable pedestal mount features self-aligning bearings for the elevation pivots, resulting in “zero” backlash and the ability to upgrade the antenna for motorized operation, including steptracking/SmartTrack™ applications. The motorizable mount type, signified by the addition of the letters “MP” in the part number indicate that this antenna is a motorizable pedestal with azimuth/elevation strut assemblies and “MPJ” indicates that this antenna is a motorizable, pedestal with field installed azimuth and elevation machine jackscrews. The MPJ antennas are equipped for integration with the optional motor drive systems listed separately.

Manual Mount

The manual pedestal mount type provides the same strong and versatile combination of mechanical features as the motorizable version except that the elevation and azimuth axes are locking types instead of bearing mounted. This mount is always equipped with manual struts and a fixed mount for the combining network (ordered separately).

Antenna Hub

The aluminum hub and hot-dipped galvanized steel mount maintains pointing accuracy and ensures durability and reliability. The antenna and standard manual mount with standard enclosure will survive 125mph (200-km/h) wind, in any position of operation without damage or permanent deformation.

Mechanical Characteristics

Feed Type	Dual-reflector, Gregorian
Reflector Material	Precision-formed aluminum
Reflector Segments	8
Mount Type	Elevation over Azimuth, Tripod

4.6 Meter Antenna with Motorizable Mount
link foundation specification bulletin 37846C

