

Earth Station Antennas

9.1-Metre

Features:

- **Superior Performance**
FCC 25-209 Compliant Across Entire Transmit/Receive Bands
Meets or Exceeds INTELSAT "B/D-2/F-3" and CCIR 580 Requirements
- **Gregorian Optics**
Exceptionally High Gain
Excellent Operational Efficiency
- **Galvanized Ground Mount Assembly**
Maximum Durability with Minimal Maintenance
- **Large Equipment Enclosure**
- **Optional Single or Dual Speed Motorized Mount**

The Andrew 9.1-metre earth station antenna is designed to address the requirements of the television broadcast industry and other telecommunication system operators demanding unsurpassed flexibility and electrical performance in a single cost effective package.

The computer optimized Gregorian dual-reflector system, together with precision stretch-formed reflector panel segments using close-tolerance manufacturing techniques, results in exceptionally high gain, superior efficiency and closely controlled pattern characteristics. All aluminum reflector panels and trusses are independently adjustable to ensure precise panel alignment. The effects of differential expansion are therefore minimized to provide consistent performance throughout the operating temperature range. A large equipment enclosure is integrated into the antenna back structure assembly which easily accommodates optional 4-port combining networks with corresponding support systems.



The hot-dipped galvanized steel ground mount assembly ensures extended product life while use of galvanized and stainless steel hardware throughout the antenna structure maximizes corrosion resistance. The elevation-over-azimuth mount enables horizon-to-horizon coverage from any world-wide location.

A variety of optional equipment and services are offered from Andrew to further enhance the operational capabilities of the 9.1-metre earth station antenna system. Available equipment options include 2-, 3-, or 4-port linear or circularly polarized combining networks, programmable control systems, feed rotation systems, maintenance platforms, anti-icing equipment, professionally designed and documented cross-axis waveguide kits and pressurization systems.

Type Number	ESA91-4A	ESA91-46A	ESA91-4CPA	ESA91-46CWA*
Electrical Specifications				
Operating Frequency, GHz				
Receive	3.7-4.2	3.7-4.2	3.7-4.2	3.625-4.2
Transmit	—	5.925-6.425	—	5.850-6.425
Gain, Steady State, Mid-band, ± 0.2 dBi				
Receive	50.4	50.4	50.4	50.3
Transmit	—	53.9	—	53.8
Polarization	Linear	Linear	Circular	Circular
VSWR, Maximum: Receive (Transmit)	1.30 (—)	1.30 (1.25)	1.30 (—)	1.30 (1.25)
Beamwidth, Mid-band, Degrees				
-3 dB Receive (Transmit)	0.51 (—)	0.51 (0.32)	0.51 (—)	0.51 (0.32)
-15 dB Receive (Transmit)	1.00 (—)	1.00 (0.62)	1.00 (—)	1.00 (0.62)
Antenna Noise Temperature at Feed Interface, $\pm 2K$				
10° Elevation	30	30	33	39
30° Elevation	19	19	22	28
50° Elevation	17	17	20	26
Radiation Pattern Performance	Per FCC Regulation 25-209 and Per CCIR Recommendation 580			
Tx Power Handling Capability, kW (per port)	—	5	—	5
Feed Interface Flanges mate with, Receive (Transmit)	CPR229G (—)	CPR229G (CPR137G)	CPR229G (—)	CPR229G (CPR137G)
Isolation, Tx into Rx, dB	—	40	—	40
Cross-Polarization Discrimination, dB, on axis	35	35	—	—
Axial Ratio	—	—	1.06	1.06

*Including 4-port network

Mechanical Specifications

Antenna Diameter	9.1m
Antenna Type	Gregorian, Dual-Reflector
Subreflector Type	Ellipsoid
Mount Type	EL over AZ
Reflector Construction	Aluminum 20 Panel Segment Circumferential Shell Design

Antenna Pointing Range: Coarse (Continuous)

Elevation	0-90° (90°)
Azimuth	180° (120°)
Polarization	360° (180°)

Motor Drive System, Travel Rates

Single-Speed Power	380VAC; 3 phase; 50 Hz
Elevation	0.01°/sec
Azimuth	0.01°/sec
Polarization	—
Dual-Speed Power	208VAC; 3 phase; 60 Hz
Elevation, low (high)	0.2°/sec (2°/sec)
Azimuth, low (high)	0.2°/sec (2°/sec)
Polarization	2.5°/sec

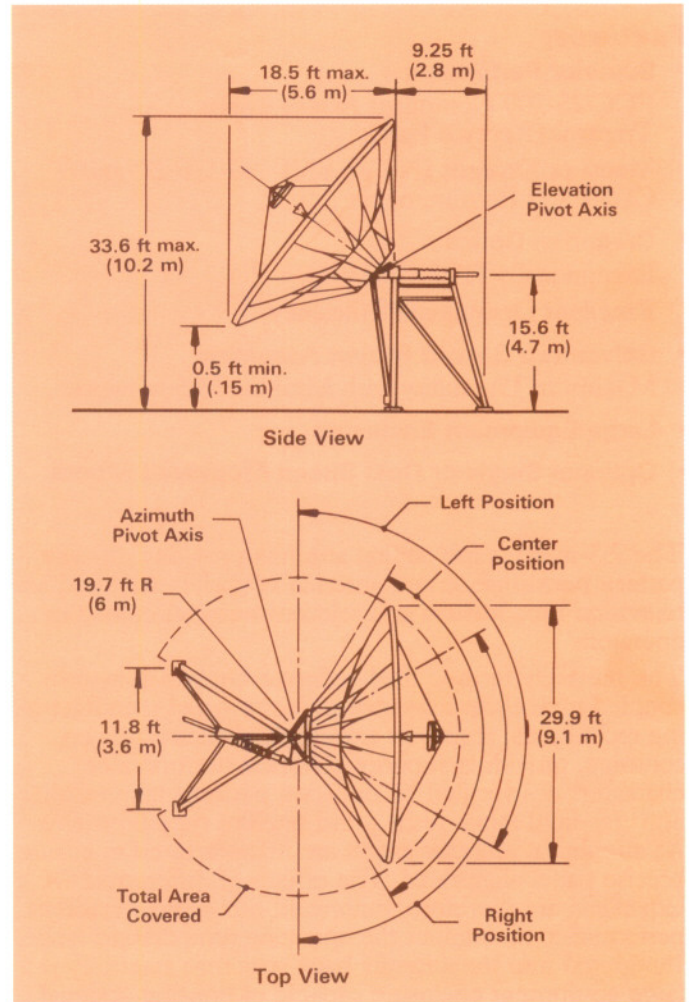
Weight, Net	8000 lb (3629 kg)
Shipping (Typical)	10,300 lb (4672 kg)

Material/Finish	Aluminum, chromate converted and painted with highly diffusive white paint
Reflector	Aluminum, chromate converted and painted with high gloss white paint
Back Structure	Hot-dipped galvanized steel
Ground Mount	Stainless and hot-dipped galvanized steel
Installation Hardware	Stainless and hot-dipped galvanized steel

Enclosure	
Diameter	78 in (1981 mm)
Depth	42 in (1067 mm)

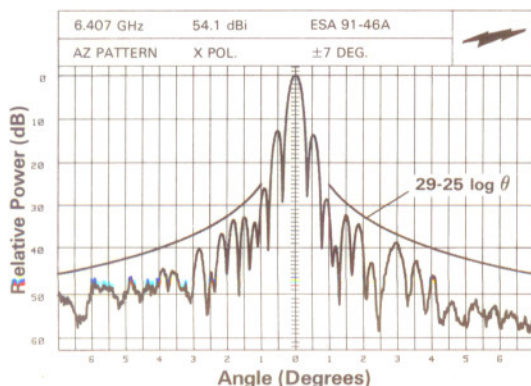
Foundation Specifications (Typical)

Type	Slab	Pier
Size		
Width	18.75 ft (5.7 m)	5 ft (1.5 m)
Depth	2 ft (.6 m)	20.5 ft (6.2 m)
Length	18.75 ft (5.7 m)	—
Concrete		
Volume	26 yd ³ (19.9 m ³)	19.3 yd ³ (14.7 m ³)
Compressive Strength	3000 lb/in ² (211 kg/cm ²)	3000 lb/in ² (211 kg/cm ²)
Reinforcing Steel	2840 lb (1288 kg)	2400 lb (1089 kg)
Soil Bearing Capacity	4000 lb/ft ² (19528 kg/m ²)	3000 lb/ft ² (14646 kg/m ²)
Conduit (PVC)		
Electrical	2 in (51 mm)	
IFL	4 in (102 mm)	



Environmental Specifications

Wind Loading	Survival (steady state) Operational	125 mph (200 km/h) 45 mph (72 km/h) gusting to 65 mph (105 km/h)
Motor Drives		To 65 mph (105 km/h)
Temperature	Operational	-40° to 125°F (-40° to 52°C)
Pointing Accuracy	30 mph (48 km/h) Winds Gusting to 45 mph (72 km/h)	0.034° RMS
Seismic (earthquake)		Grade 11-Mercalli Scale
Rain		4 in (102 mm)/hour
Relative Humidity		100%
Solar Radiation		360 BTU/hr/ft ² (1135 watts/m ²)
Shock and Vibration		As encountered by commercial air, rail and truck shipment.
Atmospheric Conditions		As encountered in corrosive coastal and industrial areas.



Actual satellite pattern measured upon completion of Andrew installation/alignment