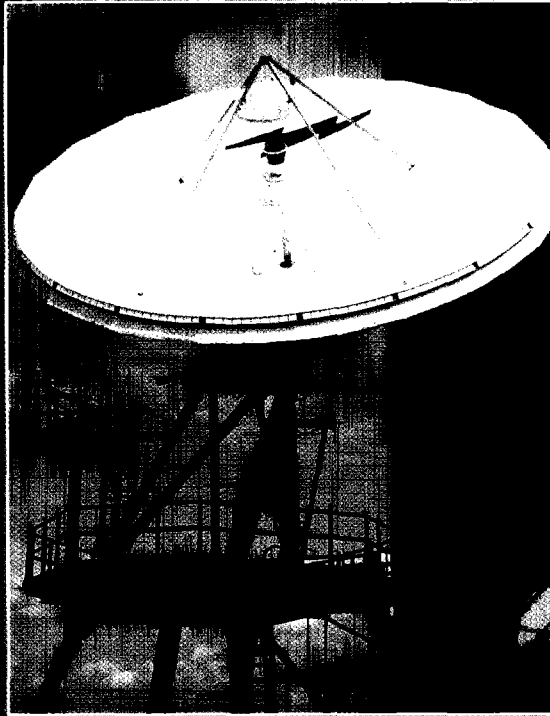


## Satellite Communications Systems



### Electrical Performance Meets or Exceeds:

- *INTELSAT requirements for B, F-3, F-2, F-1, D-2 and G.*
- *U.S. FCC regulation 25.209, for mandatory pattern requirements for 2° satellite spacing.*
- *ITU-R, S.580-4 and S.465-5 recommendations for pattern performance for 2° satellite spacing.*
- *Approved for use in the territory of Russia by the Ministry of Communications of the Russian Federation (Reference: Homologation Certificate No. OC/1-AΦ-1).*

### Guaranteed System Performance

Each Andrew System is Individually Designed, Engineered, Installed and Tested to Meet or Exceed Customer Requirements and System Specifications.

### Control Options

Microprocessor or Steptrack Control Options Available for Motorized Antennas.

### Wind Survival

125 mph (200 km/h) Wind Survival, in any Position of Operation.

### Extra Large Equipment Enclosure

84 inch (2134 mm) Diameter by 46 inch (1170 mm) Deep Enclosure has Room for the Most Complicated Transmit Equipment with Room to Spare.

### Optional Accessories

Various Combining Networks, Control Systems, Maintenance Platforms and Waveguide Kits.

**Exceptionally High Gain, Superior Efficiency and Closely Controlled Pattern Characteristics.** As the first 9.3-meter antenna ever commissioned as a "B" station, fully compliant, meeting and exceeding INTELSAT and U.S. FCC requirements, Andrew 9.3-meter antennas are proven performers. 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.

### Unsurpassed Flexibility and Electrical Performance.

The Andrew 9.3-meter 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.

**Precision Manufacturing Techniques.** All aluminum reflector panels and trusses are independently adjustable to ensure precise panel alignment.

**Extended Product Life.** The hot-dipped galvanized steel ground mount assembly ensures extended product life while the use of galvanized and stainless steel hardware throughout the antenna structure maximizes corrosion resistance.

**Worldwide Coverage.** The elevation-over-azimuth mount enables horizon-to-horizon coverage from any worldwide location.

**Future Versatility.** A variety of optional equipment and services are offered from Andrew to further enhance the operational capabilities of the 9.3-meter earth station antenna system. Available equipment options include 2- or 4-port, linearly- or circularly-polarized combining networks, programmable control systems, feed rotation systems, maintenance platforms, professionally designed and documented cross-axis waveguide kits and pressurization systems.

## Electrical

### Operating Frequency Band\*

<b>C-Band Receive</b>	3.625-4.2 GHz
<b>C-Band Transmit</b>	5.850-6.425 GHz

### ES93 Series

Rx Frequency	Rx Gain	Tx Frequency	Tx Gain
at 3.625 GHz	49.8	at 5.850 GHz	53.5
at 4.000 GHz	50.7	at 6.175 GHz	54.0
at 4.200 GHz	51.1	at 6.425 GHz	54.3

### ES93B Series

Rx Frequency	Rx Gain	Tx Frequency	Tx Gain
at 3.625 GHz	50.2	at 5.850 GHz	53.3
at 4.000 GHz	51.1	at 6.175 GHz	53.7
at 4.200 GHz	51.5	at 6.425 GHz	54.0

### Polarization\*

Linearly- or Circularly-Polarized

### Polarization Discrimination, (Linearly-Polarized):

>35 dB across 1 dB beamwidth 19 - 25 log  $\theta$  from 1.8° to 9.2°

### Voltage Axial Ratio\*, C-Band, circularly-polarized with 4-port combiner

<1.06:1 across the 1 dB beamwidth

### Beamwidth, Mid-Band, Degrees

<b>3 dB Receive (Transmit)</b>	0.51 (0.34)
<b>15 dB Receive (Transmit)</b>	1.00 (0.65)

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

Elevation	Kelvin
10°	22
30°	12
50°	10

### Antenna VSWR\*, Transmit and Receive <1.25:1

\* Actual antenna specifications are amended by the choice of feed/combiner options. For further feed/combiner option information, ask for Andrew Bulletin 1663A.

## Typical Slab Foundation Information

<b>Soil Bearing Capacity</b>	2000 PSF (9,770 kgf/m <sup>2</sup> )
<b>Reinforcing Steel</b>	1.47 tons (1339 kg)
<b>Concrete Compressive Strength</b>	3000 lb/in <sup>2</sup> (211 kgf/cm <sup>2</sup> )
<b>Foundation Size:</b>	
<b>Length</b>	19.5 ft (5.94 m)
<b>Width</b>	19.5 ft (5.94 m)
<b>Depth</b>	2.5 ft (0.76 m)
<b>Concrete Volume</b>	35.2 yd <sup>3</sup> (27 m <sup>3</sup> )

Note: Other typical foundation designs are available.

## G/T Performance\*

<b>LNA/LNB Noise Temperature</b>	65K	45K	30K
<b>ES93 G/T at 10° EL (dB/K)</b>	30.5	30.9	31.8

\* Based on a 4-port, linearly-polarized antenna configuration at 4 GHz

## Uplink EIRP Capability\*

<b>HPA Output (Watts)</b>	125	400	3000
<b>Uplink EIRP (dBW)</b>	74.8	79.8	88.6

\* 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.

## Mechanical

<b>Feed Type</b>	Dual-Reflector, Gregorian
<b>Reflector Material</b>	Precision-Formed Aluminum
<b>Reflector Segments</b>	20
<b>Mount Type</b>	EI over AZ, Tripod

### Antenna Pointing Range, Coarse/(Continuous)

<b>Elevation</b>	0-90° (90°)
<b>Azimuth</b>	180° (120°)
<b>Polarization</b>	180° (180°)

### Hub/Enclosure Dimensions

<b>Diameter</b>	84 in (2.31 m)
<b>Depth</b>	46 in (1.17 m)

### Wind Loading, Survival

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

### Wind Loading, Operational (motor drives)

45 mph (72 km/h), 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/ft<sup>2</sup> (1135 Watts/m<sup>2</sup>)

### 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.

## Motor Drive Speed Summary

Drive System Type	Speed Summary		
	High	Medium	Low
HS	Fast	Slow	-
MS	-	Fast	Slow
STHS	Fast	-	Slow

Note: All motorization drive packages are comprised of dual-speed motors, yielding a "fast" and "slow" speed for each speed range per the above chart. All 50 Hz motor drive speeds are approximately .83 the speed of the 60 Hz motor.

### For antenna series: ES93HS- equipped with the MK9HS- series drive systems with 60 Hz motors.

#### Nominal Speed, (degrees/second)

<b>Elevation, Slow/Fast</b>	.15°/1.5°
<b>Azimuth, Slow/Fast</b>	0.2°/2.0°
<b>Polarization</b>	2.2°

### For antenna series: ES93- equipped with the MK9MS- series drive systems with 60 Hz motors.

#### Nominal Speed, (degrees/second)

<b>Elevation, Slow/Fast</b>	.017°/.07°
<b>Azimuth, Slow/Fast</b>	.023°/.1°
<b>Polarization</b>	2.2°

### For antenna series: ES93HS- equipped with the MK9STHS- series drive systems with 60 Hz motors.

#### Nominal Speed, (degrees/second)

<b>Elevation, Slow/Fast</b>	.016°/1.0°
<b>Azimuth, Slow/Fast</b>	.016°/2.0°
<b>Polarization</b>	2.2°