13.2M Ka-Band Antenna

Description
Large diameter Ka-band antennas require unique design criteria which General Dynamics SATCOM Technologies has successfully demonstrated with both the 9.2 and 13.2 meter products. Items such as reflector surface accuracy, antenna/ feed design, structural antenna stiffness and integrity, thermal effects, anti-icing, HPA phase combining, monopulse tracking, installation and alignments and hub integration all require special engineering expertise at Ka-band. SATCOM Technologies has proven our expertise in the above areas and has earned the position as a preferred antenna system provider and integrator to a number of major satellite broadcasting companies by providing in excess of fifty systems of this type over the past five years alone.

Features
- Precision Ka-band rated surface reflector with counterweights
- High stiffness turntable bearing
- DC motor jackscrew drive in elevation
- Dual DC motor gear-pinion drive with mechanical anti-backlash in azimuth
- Access stairway and large work platform for ease of maintenance
- 9.2 foot diameter hub with five foot roll up access door
- Housing for up to eight high power amplifiers (HPAs)
- HPA mounting via slide mounts and a mechanical de-weighting mechanism allows for easy maintenance and replacement
- Up and down converter integration providing a wideband L-band interface
- Easily accessible test and monitor points
- Strategically placed handles and storage to allow easy and safe access to hub
- Phase/power combined HPA design capability
- Power meter sensing of TX power capability
- Transmit signal block downconverters to allow spectrum monitoring at L-band in the control building.
- Complete M&C capability for monitoring and control of all hub components.
- Hub and antenna mounted electrical outlets and lighting
- Lightning protection
- Temperature monitoring
- Redundant two channel monopulse tracking system
- Redundant HVAC systems for hub and pedestal

Applications
- TT&C
- IOT
- Broadband Gateways
- High Power Uplinks
## Technical Specifications

### PERFORMANCE PARAMETERS | KA-BAND
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**Reflector** | 13.2 meter, counterweight

**Optics Configuration** | Cassegrain

**Frequency** | Standard Band | Custom Band
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Transmit | 28.35-30.00 GHz | 27.50-31.00 GHz
Receive | 18.30-20.20 GHz | 17.70-21.20 GHz

**Antenna Gain (Standard Band)**
- Transmit @ Feed Tx Port Input
- Receive @ LNA Input
- 69.1+20Log(F/30) dBi
- 66.3+20Log(F/20.2) dBi

**G/T (min) @ 30° Elevation and 120K LNA (Standard Band)**
42.2 + 20 Log (F/20.2) dBi/K (includes Feed to LNA losses for 1:2 LNA Redundancy)

**Polarization (Transmit and Receive)** | Dual Circular

**3 dB Beamwidth** | Transmit | Receive
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0.06° | 0.09°

**Axial Ratio @ 1dB BW (X-POL Isolation in dB)** | 0.5 dB (30.7 dB)

**Port to Port Isolation**
- Transmit to Receive
- Receive to Transmit
- Transmit to Transmit
- Receive to Receive
85 dB | 85 dB | 20 dB | 20 dB

**VSWR** | 1.35:1 Max

**Sidelobe Performance (Tx/Rx)**
- ITU-R S.580-5
- FCC CFR-47 & 25.209

**Power Handling** | 1 kW CW Per Port, 2 kW Total

**Feed Waveguide Flange** | Rx (WR-42), Tx (WR-34)

**Pressurization**
- Operational
- Maximum
0.5 psi | 2.0 psi

**Elevation Travel** | 0 to 90° Continuous

**Azimuth Travel** | ±100° Continuous

**Axis Velocity** | 0.5°/s

**Axis Acceleration** | 0.2°/s²

**Azimuth Drive Configuration** | Gear and Pinion AZ dual Motor Drives

**Elevation Drive Configuration** | Jackscrew – Single Motor Drive

**Motor Type for Azimuth and Elevation** | Servo Motor

**Antenna Two-Axis Pointing Performance** (over 10 degree of axis travel)
- 0.0083° RMS, No Wind
- 0.0136° RMS Winds 30 mph gusting to 45 mph

**Tracking Performance for Optrack** (C/No: 45 dB-Hz)
- 0.0041° RMS, No Wind
- 0.0070° RMS Winds 45 mph gusting to 60 mph

**Tracking Performance for Monopulse** (C/No: 45 dB-Hz)
- 0.0028° RMS, No Wind
- 0.0031° RMS Winds 45 mph gusting to 60 mph

**Tracking Modes**
- Program Track
- Optrack/Step Track
- Monopulse

**Anti-Icing**
- Feed Blower
- Heated Subreflector
- Optional Primary Reflector – Gas or Electric (as required)