

Antenna Statement
General Dynamics (Prodelin)
3.8 Meter Antenna 1385

The 6 GHz antenna pattern contained with this application meets the antenna performance standards set forth in CFR §25.209.

The radiation pattern envelope for the Prodelin 1385 is identical in performance to the Prodelin 1383. The model 1383 has been licensed numerous times with the FCC noting the antenna performance at 6 GHz meeting CFR §25.209 requirements as well.

The application file number and Call sign, SES-LIC-20070615-00823 (E070112) of a previously licensed Prodelin 1383, 3.8 meter earth station, indicates that the antenna proposed in this application will operate without conflict.

The maximum input spectral power density into the antenna for the proposed 3.8 meter Prodelin 1385 antenna will not exceed -14.8 dBW/4 kHz.



TRANSMIT / RECEIVE ~ NEW SERIES 1385 ~ 3.8m VSAT ANTENNA



Key Features

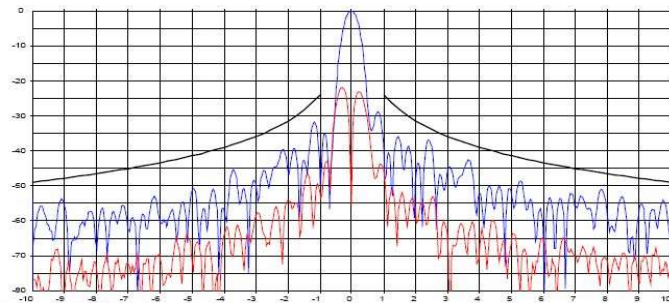
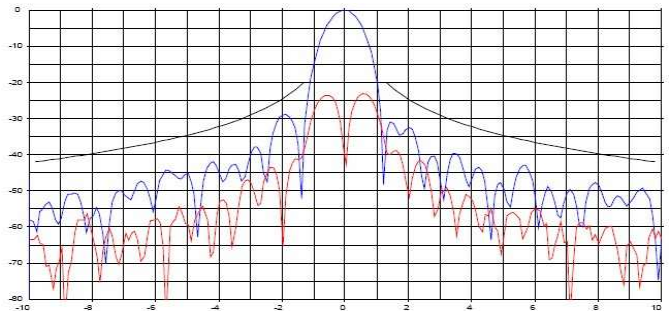
- **UPGRADED INTEGRAL RIB DESIGN FOR HIGHER FREQUENCY OPERATION.**
- **INCREASED STRENGTH FOR HEAVIER RADIO AND ODU EQUIPMENT LOADS.**
- **HIGHER PRECISION ASSEMBLY AND ALIGNMENT FROM AUTOMATED MANUFACTURING PROCESSES.**
- **FIELD FRIENDLY INSTALLATION WITHOUT REQUIREMENT FOR SPECIALIZED TOOLS.**
- **ANTI-ICE CAPABILITY FOR USE IN COLD CLIMATE AND ARCTIC ENVIRONMENTAL CONDITIONS.**
- **OPTIMIZED, 4-PIECE REFLECTOR DESIGN FOR MAXIMUM SHIPPING EFFICIENCIES.**
- **UPGRADABLE FOR HIGH XPD PERFORMANCE.**

Description

The General Dynamics new series 1385 ~ 3.8m antenna has been designed to provide a reliable, long-life and trouble free antenna solution for demanding applications in the primary VSAT communications bands. Enhancements to this antenna design have improved the structural stability and surface tolerances of the reflector, offering growth potential for reliable communications up to Ka-band.

The antenna has been designed to meet the performance requirements of the major satellite service providers and regulatory agencies.

The mechanical design has been optimized for high efficiency packaging to reduce shipping costs. Material selections for the reflector significantly reduce the risk for shipping damage when compared to metal reflector solutions. Factory pre-assembly of critical components eliminates the requirement for complex assembly procedures in the field.



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Series 1385 Transmit / Receive Multi-band 3.8m VSAT Antenna

PARAMETERS				
	C-Band Linear	C-Band Circular	Ku-Band Linear	X-Band Circular
Electrical Performance				
Antenna Size	3.8m	3.8m	3.8m	3.8m
Frequency (GHz)	Rx 3.625 – 4.2 GHz Tx 5.845 – 6.425 GHz	Rx 3.625 – 4.2 GHz Tx 5.845 – 6.425 GHz	Rx 10.95 GHz – 12.75 GHz Tx 13.75 – 14.50 GHz	Rx 7.25 – 7.75 GHz Tx 7.9 – 8.4 GHz
Antenna Gain at Midband, dBi (± 0.2dB)	Rx 42.0 dBi Tx 46.5 dBi	Rx 41.8 dBi Tx 46.3 dBi	Rx 51.2 dBi Tx 53.0 dBi	Rx 47.8 dBi Tx 48.4 dBi
VSWR	Rx 1.3:1 Max.(<-17.7 dB) Tx 1.3:1 Max.(<-17.7 dB)	Rx 1.3:1 Max.(<-17.7 dB) Tx 1.3:1 Max.(<-17.7 dB)	Rx 1.5:1 Max. (<-14.0 dB) Tx 1.3:1 Max. (<-17.7 dB)	Rx 1.3:1 Max. (<-17.7 dB) Tx 1.3:1 Max. (<-17.7 dB)
Pattern Beamwidth (in degrees at midband)				
-3 dB	Rx 1.4 deg Tx 0.9 deg	Rx 1.4 deg Tx 0.9 deg	Rx 0.5 deg Tx 0.4 deg	Rx 0.8 deg Tx 0.7 deg
-15 dB	Rx 3.2 deg Tx 2.0 deg	Rx 1.4 deg Tx 0.9 deg	Rx 1.0 deg Tx 0.9 deg	Rx 1.6 deg Tx 1.5 deg
Sidelobe Performance				
1° ≤ θ ≤ 20°	29–25 log(θ) (Note)	29-25 log (θ) (Note)	29-25 log (θ) (Note)	29-25 log (θ) (Note)
20° < θ ≤ 26.3°	-3.5 dBi	-3.5 dBi	-3.5 dBi	-3.5 dBi
26.3° < θ ≤ 48°	32-35 log (θ)	32-35 log (θ)	32-35 log (θ)	32-35 log (θ)
48° < θ <180°	≤ - 10 dBi averaged	≤ - 10 dBi averaged	≤ - 10 dBi averaged	≤ - 10 dBi averaged
Note: In receive portion of C-band only, sidelobe envelope specified from 100W/D rather than 1°				
Antenna Noise Temperature				
5° Elevation	55 K	62 K	70 K	60 K
10° Elevation	45 K	52 K	60 K	51 K
20° Elevation	38 K	45 K	55 K	47 K
40° Elevation	36 K	43 K	45 K	47 K
Power Handling	1 kW	1 kW	100 W	2 kW
Cross Polarization Isolation				
On Axis	> 30 dB	Rx > 15 dB Tx > 17.7 dB	Rx > 30 dB Tx > 35 dB	Rx > 23.2 dB Tx > 18.8 dB
Within 1.0 dB Beamwidth	> 27 dB	Rx > 15 dB Tx > 17.7 dB	Rx > 25 dB Tx > 26 dB	Rx > 23.2 dB Tx > 18.8 dB
Note: Standard C-band Circular polarization in Tx-Band provides an axial ratio of 1.3 (XPD equivalence of 17.7 dB). Optional F-1 station feed available with axial ratio of 1.09 (XPD equivalence > 27.3 dB) in Tx band. Call factory when specifying this option. X Band filters available upon request.				
Output Waveguide Interface	Rx CPR 229	Rx CPR 229	Rx WR75	Rx WR112
Flange	Tx CPR 137 or Type N	Tx CPR 137 or Type N	Tx WR75	Tx WR112
Mechanical Performance				
Reflector Material	Glass Fiber Reinforced SMC			
Antenna Optics	Easy-to-assemble, 4 Pc., Offset Fed Prime Focus Design with 0.6F/D optics.			
Mast Pipe Size	10" SCH 40 Pipe (10.75" OD) 27.3 cm.			
Elevation Adjustment Range	12° to 90° or 0° to 15° for Polar Latitudes			
Azimuth Adjustment Range	360° Continuous with +/- 35° Fine Adjustment			
Shipping Specifications				
Approximate Net Weight	Weight (nominal) 1125 lbs. (511 Kg).			
Approximate Packaged Weight	Weight (nominal) 1882 lbs., (855 Kg).			
Environmental Performance				
Wind Loading				
Operational	50 MPH (80 km/h)			
Survival	125 mph (201 km/h)			
Temperature Range (operational)	-40° to 140° F (-40° to 60° C)			
Rain (operational)	½" (13mm) per hour			
Ice (operational)	-----			
Atmospheric Conditions	Salt, Pollutants and Contaminants as Encountered in Coastal and Industrial Areas			
Relative Humidity	0 to 100% Condensing			
Solar Radiation	360 BTU/h/ft²			

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