

# 4.0 Meter ESA

Like all Kratos earth station antennas, the 4.0Meter low-cost Earth Station Antenna provides high gain and exceptional pattern characteristics.

This antenna system is designed to address the stringent requirements of both the television broadcast industry and telecommunications network operators who demand unsurpassed flexibility and electrical performance in high-quality, cost-effective, and reliable packages.

The motorizable pedestal mount allows for motorized applications and features 180 degree coarse azimuth coverage in three continuous overlapping ranges. This antenna offers an optional low-cost mount utilizing a customer-provided pipe or Kratos provided flanged pipe mount. In addition, an optional equipment enclosure for this mount is available for mounting RF equipment at the antenna.

The electrical performance and exceptional versatility provides the ability to configure the antenna with your choice of linearly- or circularly- polarized 2- or 4- port combining networks. That versatility is provided at the time of initial purchase, as well as in the future, as your satellite communication requirements evolve.

This antenna system is used worldwide in broadcast applications and high density data, voice and communications networks. The Kratos 4.0 meter earth station antenna features a computer-optimized dual reflector Gregorian optics system and close-tolerance manufacturing techniques.

This combination provides extremely accurate surface contour resulting in exceptionally high gain and closely controlled pattern characteristics. Kratos earth station antennas provide maximum durability with minimal maintenance.



## Features

- High gain, excellent pattern characteristics. Gregorian Optics
- Self-aligning main reflector - no optical field alignment
- 3-year warranty on all structural components
- Meets U.S. FCC Regulation 25.209 at Ku-band
- ITU-R S.580 and S.465 compliant
- C, X, Ku, Band Capabilities

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## Design Standards

Reflector	Aluminum painted with highly diffusive white paint
Ground Mount	Hot-dipped galvanized steel, per ASTM-A123 for structural steel.
Hardware	Sizes $\leq 3/8$ in (9.5mm), stainless steel, passivated per MIL-F-14072-E300 Sizes $\geq 3/8$ in (9.5mm), hot-dipped galvanized stainless steel, passivated per ASTM-A123

## Environmental Performances

Operating Temperature	-40° to 52°C (-40° to 125°F)
Seismic (Earthquake)	1 G Vertical and Horizontal acceleration. Equivalent to a Richter Magnitude 8.3, and Grade 11 on the modified Mercalli Scale
Operational Winds	45 mph (72 km/h) Gusts to 65 mph (105 km/h)
Survival Winds	125 mph (200 km/h) in any position of operation
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	As encountered by Moderately Corrosive Coastal and Industrial Areas.

## Mechanical Performances

The 4.0m Antenna mechanical general specifications and performances are listed in below table. Additional information, dimensions and layout may be provided by Kratos on a case-by-case basis.

Optics Type	Dual Reflector Gregorian
Reflector Material	Precision-Formed Aluminum
Reflector Segments	6
Mount Type	EI over Az, Optional Manual or Motorized Mount

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

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

### Optional Hub/Enclosure Dimensions (motorizable mount only)

Diameter	1.22 m (48 in)
Depth	0.61 m (24 in)

## Shipping Information

### Packing Options

Standard Commercial Domestic Pack	Included
Ocean Export Pack - For non-containerized, packed for seal against salt water spray	OCEANSHIP-SML
Air Export Pack - For freighter aircraft shipments. Lower deck AirPack requires specialized bids	AIR EXPORT PACK-SML
Container Packaging	CNTPCK-SML

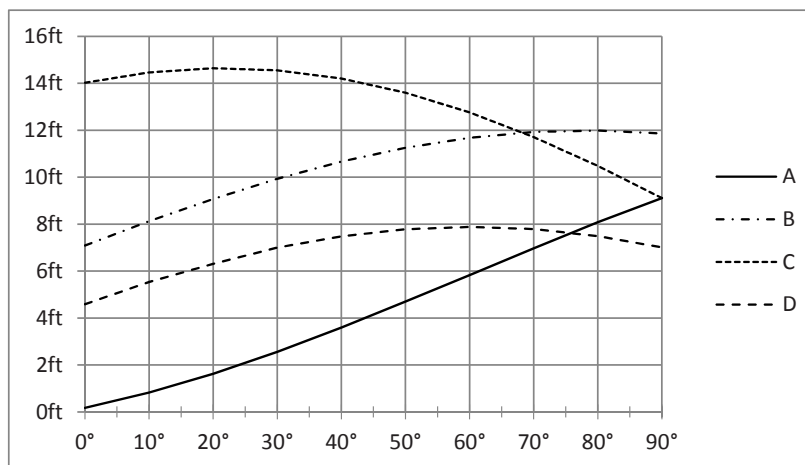
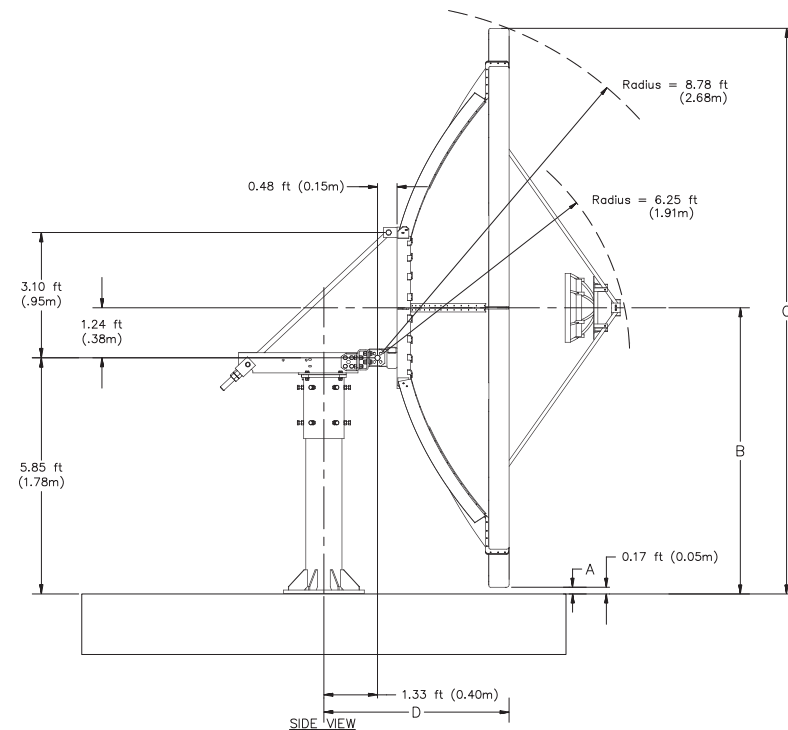
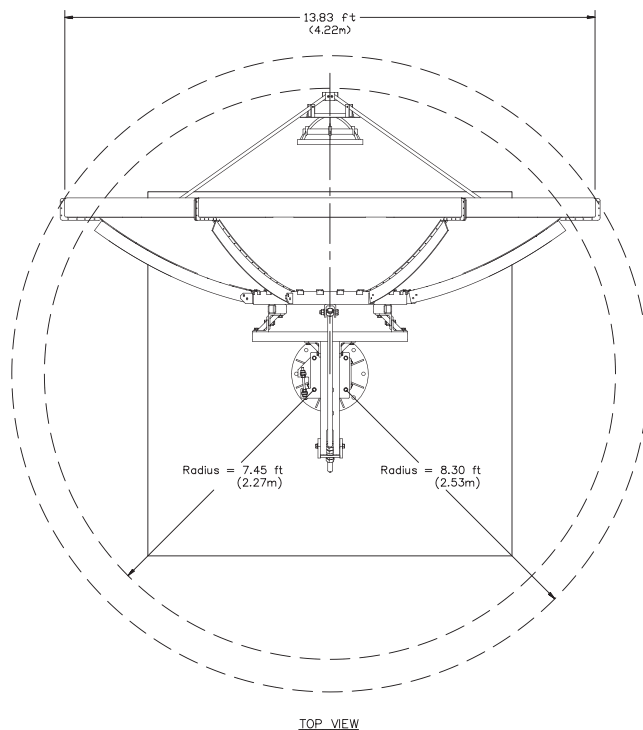
### Required Shipping Container

Standard 20 ft land/sea container	Quantity 1
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Shipping container information is given for basic configuration and may vary depending on the selected options, please contact Kratos for specific container loading plan.

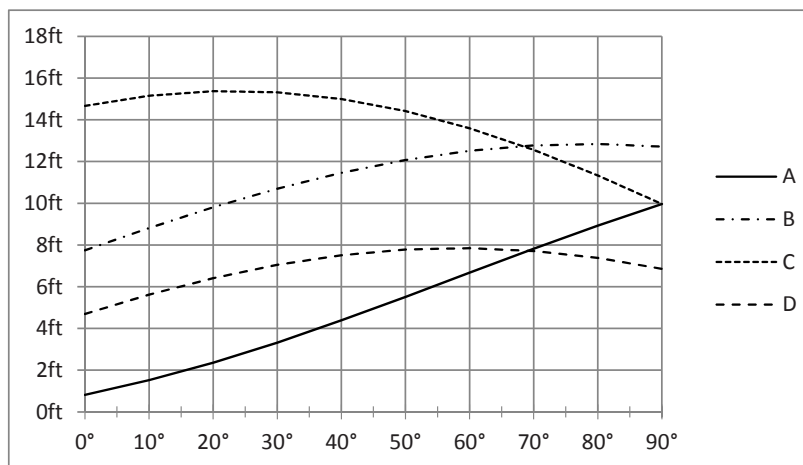
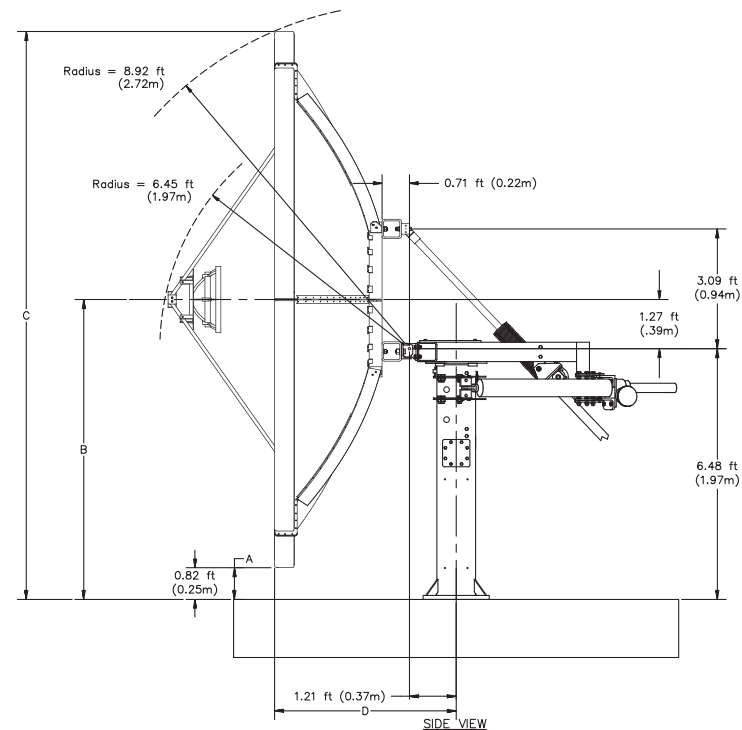
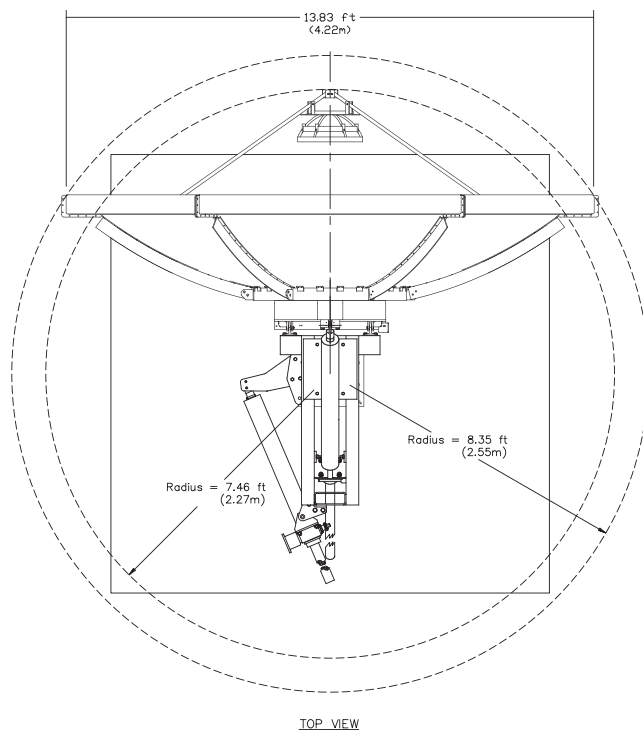
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### Dimensional Drawings Non Motorizable Mount



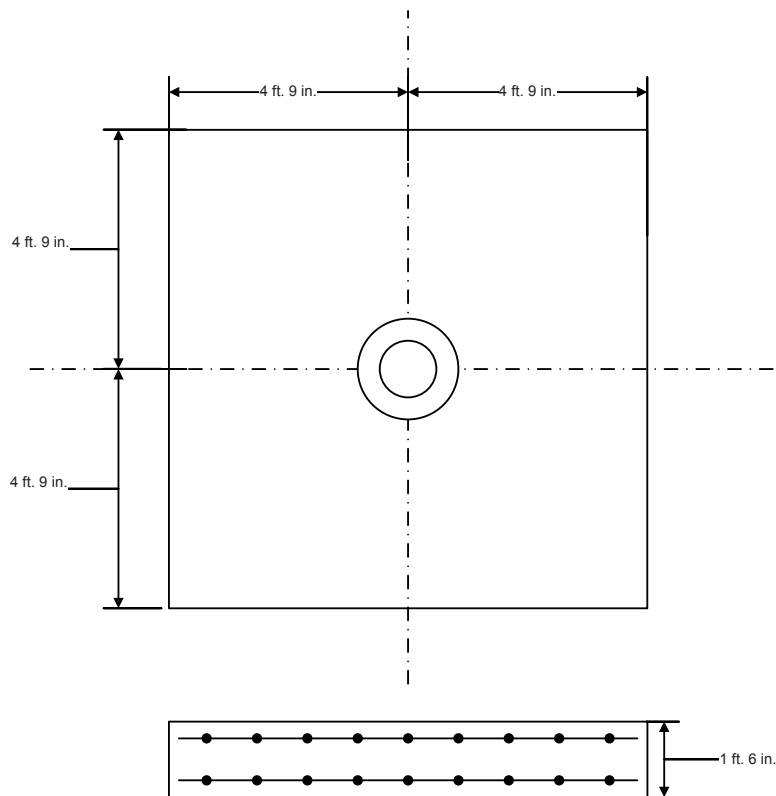
## 4.0 Meter ESA

### Dimensional Drawings Motorizable Mount



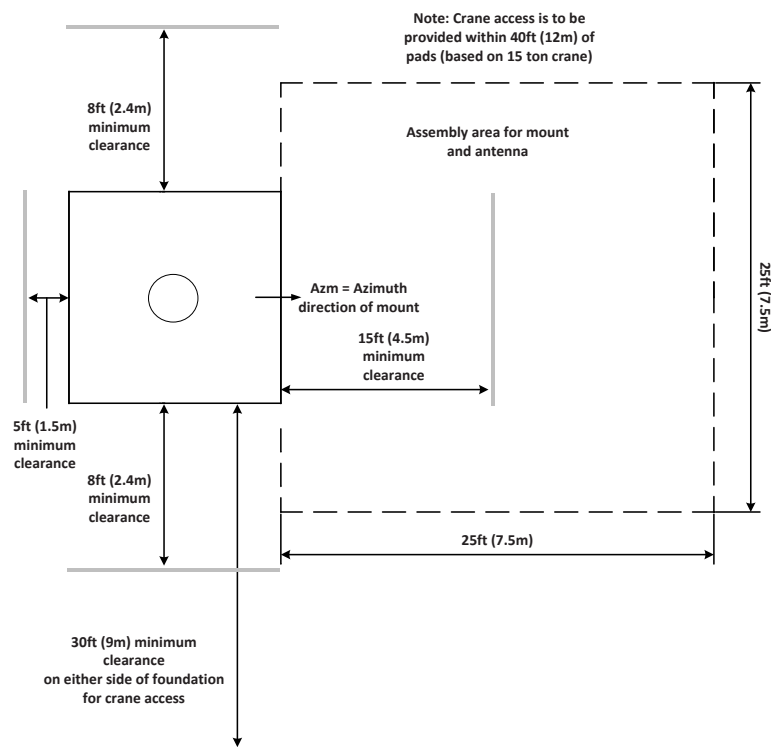
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## Typical Foundation Design (with PEDMNT-4)



Foundation information are provided in bulletin 7547321, please contact Kratos.

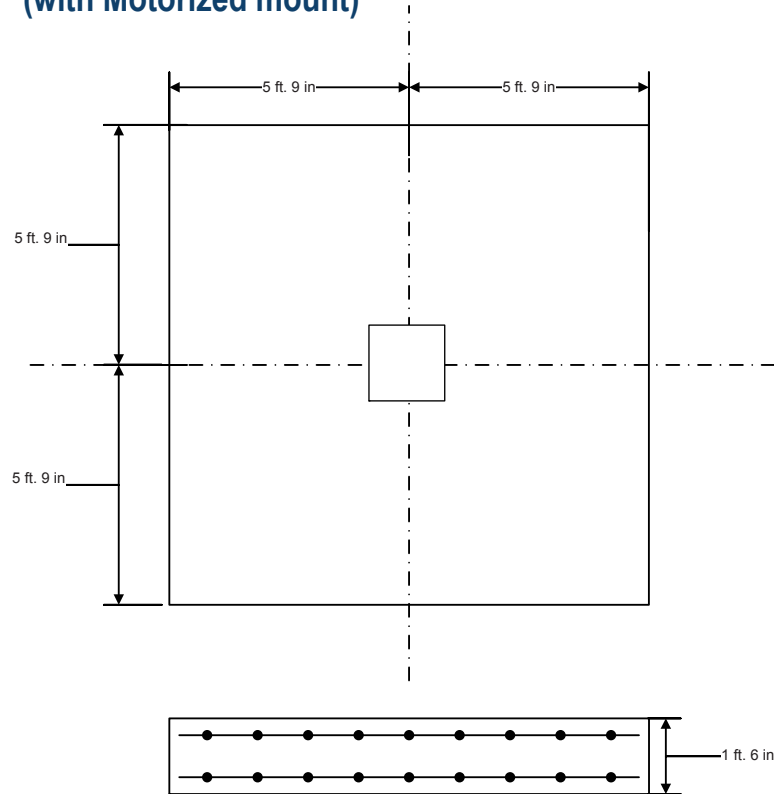
## Typical Foundation Information



Soil Bearing Capacity,	2000 lb/ft <sup>2</sup> (9770 kg/m <sup>2</sup> )
Reinforcing Steel,	-
Concrete Compressive Strength,	3000 psi (211 kg/cm <sup>2</sup> )
Foundation Size:	(for specific standard soil and typical design)
Length	9 ft 6 in (2.89 m)
Width	9 ft 6 in (2.89 m)
Depth	1 ft 6 in (0.457 m)
Concrete Volume	5 yd <sup>3</sup> (3.84 m <sup>3</sup> )
NOTE: Other typical foundation designs are available. Soil borings and foundation analysis should be performed by a qualified civil engineer.	

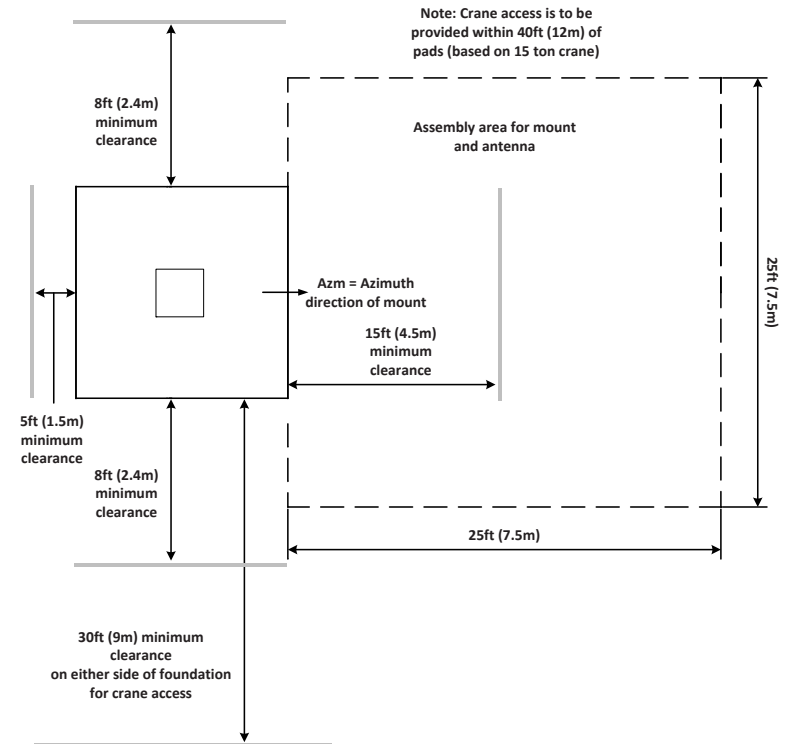
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## Typical Foundation Design (with Motorized mount)



Foundation information are provided in bulletin 37846C, please contact Kratos.

## Typical Foundation Information



Soil Bearing Capacity,	2000 lb/ft <sup>2</sup> (9770 kg/m <sup>2</sup> )
Reinforcing Steel,	688 lbs (312 kg)
Concrete Compressive Strength,	3000 psi (211 kg/cm <sup>2</sup> )
Foundation Size:	(for specific standard soil and typical design)
Length	11 ft 6 in (3.50 m)
Width	11 ft 6 in (3.50 m)
Depth	1 ft 6 in (0.457 m)
Concrete Volume	7.35 yd <sup>3</sup> (5.62 m <sup>3</sup> )
NOTE: Other typical foundation designs are available. Soil borings and foundation analysis should be performed by a qualified civil engineer.	

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## Motor Drive Speed Summary

	Variable	
Azimuth	0.5°/s	0.05°/s
Elevation	0.5°/s	0.05°/s
Polarization	1°/s	

## Motorization

One motorization system is available for this antenna: the NGC tracking system that can support Steptrack, Smartrack and Ephemeris orbital tracking.

### Motor Kit

Azimuth/Elevation Motor Kit	NGC-MK4
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### Polarization Drive Kit (Requires NGC-205)

Standard Temperature (> -20°C) not compatible with NGC-LTE, for 2 port Ku band feed only	7577986
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### Outdoor Unit Controller (Tracking)

Power 200 - 230 VAC, 3 Phase 50/60 Hz	NGC-ODU-208-3
Power 380 - 460 VAC, 3 Phase 50/60 Hz	NGC-ODU-380-3

Antenna controller, motorization and options are detailed in specific bulletins, please contact Kratos.

## Antenna Configurations

### C, X, Ku Band Earth Station Antennas

Manual Pedestal Mount.	ES40K-1
Motorizable Mount with Az/EI Jackscrews.	ES40KM-1

## Motorization and NGC Options

Indoor	
NGC-IDU	NGC Rack Mounted Antenna Controller W/LCD Touch Panel
NGC-001	NGC-IDU Analog Telephone Modem
NGC-002	NGC-IDU Spectrum Analyzer Card, Analog
NGC-003	NGC-IDU DVB Receiver Card
NGC-004-02	NGC IDU, L-Band Internal Beacon Receiver
NGC-006	NGC-IDU Emergency Stop Button
NGC-007	NGC-IDU 10 Mhz Reference Source
NGC-008	NGC-IDU Redundant Power Supply
NGC-009	NGC-IDU Rack Slides
NGC-101	NGC-IDU Step Tracking Software
NGC-102	NGC-IDU Smartrack Software
NGC-103	NGC-IDU Predictive Track Software
NGC-104	NGC-IDU Full Tracking Capability Software
NGC-106	NGC-IDU Remote Access Software Package
NGC-107	NGC-IDU Spectrum Analyzer Enhanced User Interface
NGC-108	Receive Pattern Test Tool
NGC-109	Redundancy Control Software
NGC-111	Sand/Dust Deviator Feature
NGC-119	NGC High Availability System Redundancy Software

Outdoor	
NGC-201	NGC ODU Low Temperature Kit (-40 C)
NGC-202	NGC ODU High Temperature Kit (+60 C)
NGC-205	NGC ODU AC Polarization Drive Interface
NGC-206	NGC Exterior Emergency Stop Button
NGC-207	Pre Movement Alert Warning Light And Annunciator
NGC-211	Dual Path NGC Redundancy
NGC-AESC	Environmental System Controller

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## Feed Matrix

C- BAND FEED SYSTEMS	PORT	CP	LP	RX 3.625 - 4.2 GHz	TX 5.850 - 6.425 GHz
2CPNC-40-109	2	X		X	X
2LPNC-40	2		X	X	X

X- BAND FEED SYSTEMS	PORT	CP	RX 7.25 - 7.75 GHz	TX 7.9 - 8.4 GHz
2CPX-40	2	X	X	X

Ku- BAND FEED SYSTEMS	PORT	LP	RX 10.7 - 12.75 GHz	TX 14.0- 14.8 GHz
2LPKU-40	2	X	X	X



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## Antenna Options and Spares

Anchor Bolt and Template Kits Option	
203666	Anchor Bolt Kit for 4.0 Meter Motorized Earth Station
302689	Anchor Bolt Kit for 4.0 Meter Manual Earth Station

Hub Equipment Options	
ENCL-40-1	Enclosure (Hub) for Motorized 4.0 Meter Earth Station
EMRGYLT-115	Emergency Hub Light Kit, 115 VAC
EMRGYLT-230	Emergency Hub Light Kit, 230 VAC
FV5-115	Fan and Vent Kit, 115 VAC
FV5-220	Fan and Vent Kit, 230 VAC
FV5HV-115	High Volume Fan and Vent Kit, 115 VAC
FV5HV-230	High Volume Fan and Vent Kit, 230 VAC
FV5HV-48	High Volume Fan and Vent Kit, 48VDC
HUBHTR-230	Antenna Hub Heater, 230 VAC
HUBLCNTR-115/240	Hub Power Center, 115/240 VAC
HUBLCNTR-230	Hub Power Center, 230 VAC
HUBLT-115	Hub Light Kit, 115 VAC
HUBLT-230	Hub Light Kit, 230 VAC

Safety Options	
ANTGND-5	Foundation Installed Grounding Kit
LRK5	Lightning Rod Kit
OBWRNLT-UNV	Obstruction Warning Light Kit

Other Options	
PEDMNT-4	Flanged Pipe Mount for Manual 4.0 Meter Earth Station.
221196	Handwheel Kit (2 required)
209906	Lubrication and Maintenance Kit
FTST	Feed System Testing
TK-MAN-SML	Tool Kit, Small Manual Antennas
TK-MOT-SML	Tool Kit, Small Motorized Antennas



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