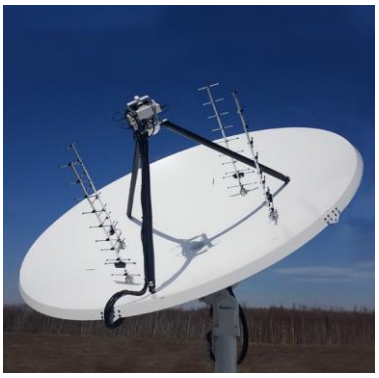
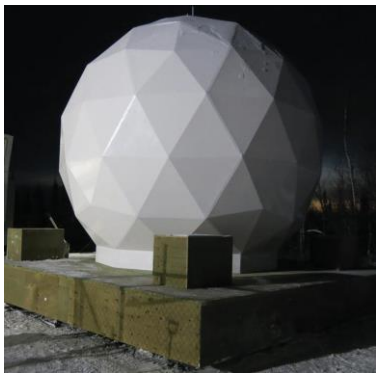
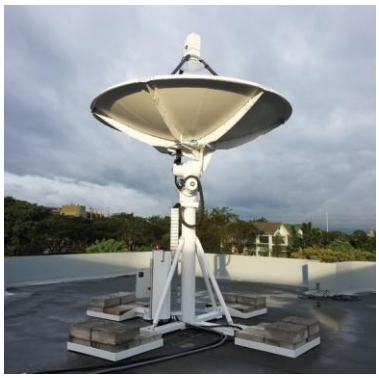
Low/Medium Earth Orbit Satellite Tracking Antenna Systems

Cost-Effective | Precision Tracking | Unlimited Configuration Flexibility

X/Y Antenna Pedestal Technology





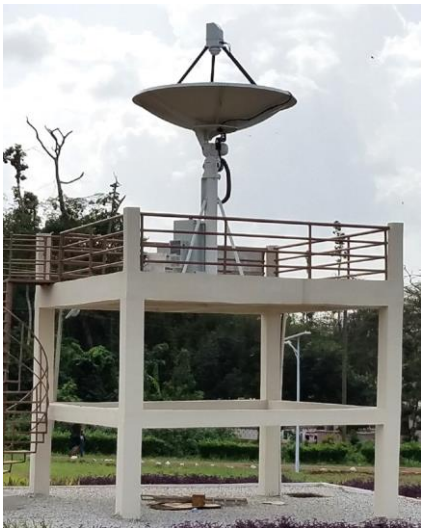


Fixed and Deployable Systems and Radomes

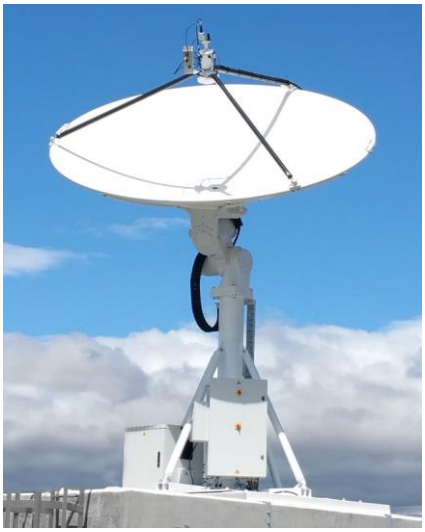
COMTECH

Comtech offers satellite and tracking solutions for ground stations in frequencies ranging from UHF, L, S, X, C, and Ku to Ka, Q, and V. We offer a range of X/Y tracking antennas coupled with installation expertise and worldwide support in extreme environments such as the Arctic, Middle East and Tropics.

Type 1 Deployable with non-ground penetrating mount



Type 1 on a platform



Type 2 ground mount

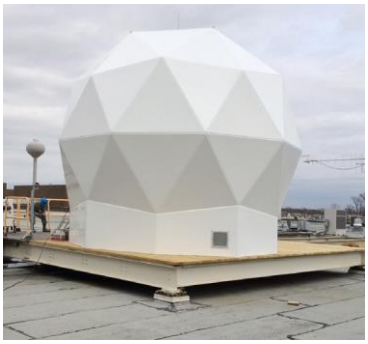
Features

- 30 centimeters to 11 meters antenna size
- X/Y axis configuration (Series A through Type 6 for increasingly larger dishes)
- Transmit/receive feed technologies through V-band
- Designed for tracking LEO, MEO, HEO and GEO spacecraft
- Applications include Earth Observation, Remote Sensing, Communications and TT&C functions
- Lights-out operation, including ethernet (TCP/IP) and M&C software is provided with Linux-based M&C system, includes SNMP and XML support
- Program and Auto Track Performance
- Effective program track capabilities that utilize ephemeris data in the form of Two-Line Element (TLE) data and other formats
- Autotrack Capabilites:
  - » Low loss mode coupler tracking system for high frequencies and larger aperture antennas that does not affect G/T performance
  - » Software assisted autotrack - the low velocity tracking dynamic of the X/Y allows the implementation of real time signal level peaking throughout the track by utilizing unique tracking algorithms to control the servo control system

Radome Options

The Comtech X/Y Antenna Systems do not require a radome for operation, but for extreme locations Comtech can provide a cost-effective radome solution. A radome offers many advantages like protection from extreme weather conditions, extension of component life and provides antenna position concealment.

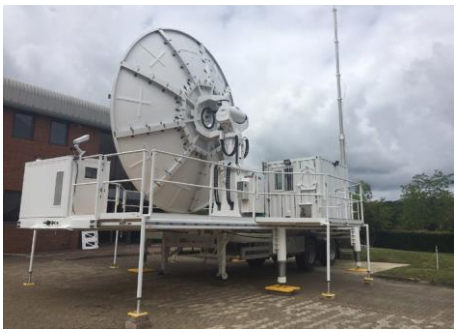
- Radome Diameter Sizes: 1.5 meters to 20 meters (larger on request) tuned for the frequency or frequencies of interest
- Foam Core Sandwich Composition – three types of construction
  - 'A' sandwich consisting of three layers
  - 'C' sandwich consisting of five layers
  - 'S' space frame design using a fiberglass framing with a reinforced PTFE-impregnated glass fiber (Teflon) fabric (ideal for wideband applications)
  - Wind Speed: Radomes capable of surviving in winds up to 200 km/hr – 300 km/hr (depending on specific model)



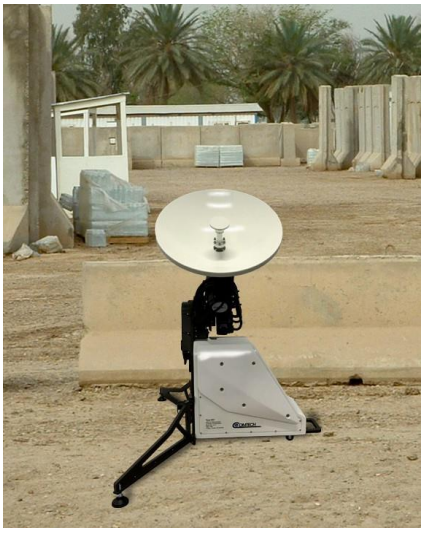
Antenna in 5m radome with integrated ring wall

Additional Features & Options:

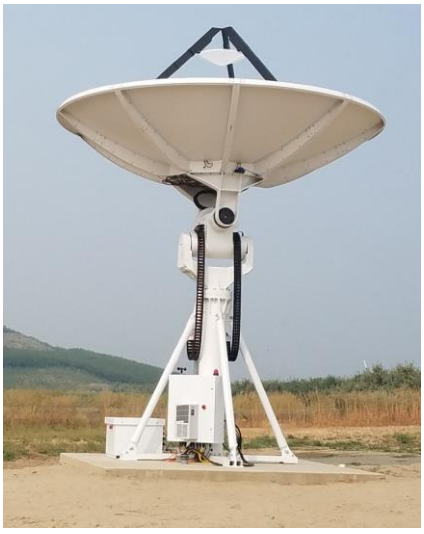
- Deployable, trailer, truck and skid mounts
- High-performance shaped Cassegrain feed configurations
- Multi-frequency feed systems
- Highly-responsive installation and maintenance services
- Full RF and data chain including:
  - » Frequency converters, spectrum analyzers, RF switching, demodulators/modems, uplink amplifiers
- Mode coupler auto-track and software RSSI auto-track (ideal for X/Y low dynamic)
- Integrated UHF Transmit and Receive capabilities



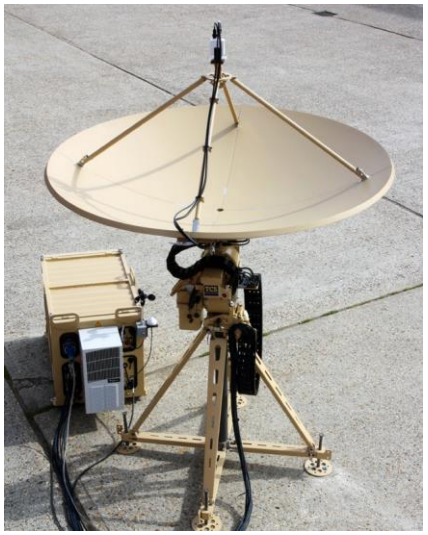
6.3m antenna on trailer mount



Type A Micro Deployable



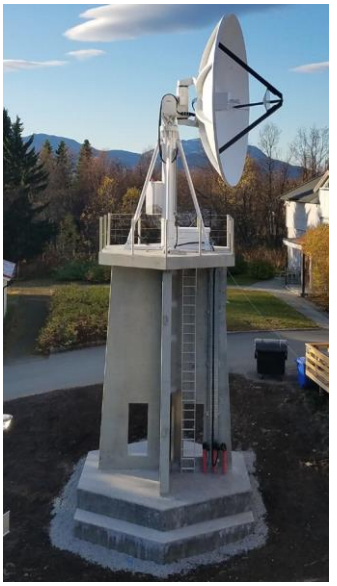
Type 5 ground mount



Deployable with breakaway X/Y mount

X/Y System Advantages:

Cost Advantage: Simplified design, advanced manufacturing techniques, and use of commercial components makes the X/Y a cost-effective antenna.



High Performance:

- System *eliminates the "keyhole" at zenith* or "cone of silence" associated with overhead passes experienced on other pedestal configurations
- *Less dynamic tracking motion* of the X/Y antenna over an El/Az provides for *more accurate pointing*, which is especially important when tracking Ka-band
- Low dynamic of movement greatly *reduces system wear*, thus extending the system life and reducing maintenance
- *No cable wrap issues*; no need for rotary joints or slip rings
- Precision gear assemblies *eliminate drive-system backlash*

Delivery: 14 to 26 weeks (ARO) for the 1st system, delivery schedules will vary based on system requirements, antenna size and factory loading at the time of the order. Some X/Y positioner stock is maintained on the shelf and ready for delivery, please inquire.

Carbon Fiber Reflectors: No need to heat the dish to avoid expansion and contraction as temperatures change; greater gain performance over an aluminum dish, especially at the higher Ka-band through
V-band ranges. Heated reflectors for ice and snow removal are available.

Environmental Resilience: System designed for operation in coastal, arctic, and desert environments.

Mechanical				
Specifications	**Pedestal** *Weight (lbs) Height (ft/in)*	**Dish Sizes**	**Pedestal** *Weight (lbs) Height (ft/In)*	**Dish Sizes**
Apertures sizes:	Series A *(45lbs)*	30cm to 50cm	Type 3 *(2,700lbs) (9'10"-14'9")*	3.5m—5.5m (Outdoor System) 6.1m (In-Radome System)
	Series B *(90lbs)*	80cm to 1.2m		
	Series C *(165lbs)*	1.4m to 1.8m	Type 4 *(3,850lbs) (9'10"-14'9")*	5.0m (In-Radome System)
	Type 1 *(725lbs) (72" to 94")*	1.8m—3.4m (Outdoor System) 3.7m (In-Radome)	Type 5 *(5,500lbs) (14'9"-20')*	5.0m—7.3m (Outdoor System) 7.6m—9.0m (In-Radome System)
	Type 2 *(2,200lbs) (9'10" - 12'2")*	3.0m—3.7m (Outdoor System) 4.2m—4.5m (In-Radome)	Type 6 *(12,500lbs)*	7.6m—9.0m (Outdoor System) 8.0m—11.0m (In-Radome System)
Point Accuracy	0.1º to 0.05º (configuration dependent)			
Position Step Resolution	0.0004º			
Acceleration	10º/S² max			
Velocity	5º/s typical to 20ºmax (note X/Y configuration only requires a fraction of the velocity that would be required with a typical El/Az configuration)			
Axis Configuration	X over Y geometry			
Axis Travel	Full hemispheric coverage			
Horizon Limits	-1º typical			
RF				
Frequency Ranges	UHF, L, S, X, C, Ku, Ka, Q, and V bands			
Polarization	Left Hand and/or Right Hand Circular Polarization (linear on request)			
Feed Configurations	Multi-band prime focus and/or Cassegrain configuration			
Autotrack feed options	Mode-coupler mono-pulse or RSSI software tracking			
G/T Performance Samples [1]	2.4-meter S-band 10.7dB/K Prime focus feed 3.0-meter X-band 24.0dB/K Prime focus feed 3.7-meter X-band 27.5dB/K Cassegrain feed 4.2-meter S-band 16.0dB/K Prime focus feed 5.0-meter X-band 29.5 dB/K Cassegrain feed 5.5-meter X-band 30.2dB/K Cassegrain feed 6.1-meter X-band 31.0dB/K Cassegrain feed 7.3-meter X-band 32.6dB/K Cassegrain feed			
Control System				
Monitor & Control	Full Linux based, includes satellite scheduler and TLE propagator.			
Interface	1Gig Ethernet (TCP/IP) (fiber optic interface can be provided), includes SMNP and XML modules			
Power	100/240Vac, 1phase, 15~30A; Types 5 and 6 require 3-phase 208VAC or 380/415VAC			
Environmental (without Radome)				
Wind Speed	80km—100km/hr wind (62 mph) Operational [2] [3] 200 km/hr wind (124 mph) Survivable			
Temperature	-40°C—+70°C (-40°F - +158°F)			
Humidity	100% Relative Humidity			
Driving rain	Up to 10cm/hr (4 in/hr)			

[1] G/T Performance at 5° elevation clear sky
[2] Optional measures (heaters, radomes, HVACS) can be taken to improve operational environmental limits
[3] Depends on pedestal/antenna combination

About Us

Comtech Telecommunications Corp. is a leading global technology company providing terrestrial and wireless network solutions, next-generation 9-1-1 emergency services, satellite and space communications technologies, and cloud native solutions to commercial and government customers around the world. Our unique culture of innovation and employee empowerment unleashes a relentless passion for customer success. With multiple facilities located in technology corridors throughout the United States and the world, Comtech leverages its global presence, technology leadership and decades of experience to create the world's most innovative communications solutions. For more information visit comtech.com.

Note: Technical specifications are subject to change without notice.

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