5.4-meter mobile X-band tracking system

Remote sensing ground station

The mobilizer concept is totally self-contained and provides a stable operating platform when fully deployed. The reflector uses a quick-latching mechanism to permit rapid assembly and disassembly of the reflector. These panels are then stored within racks on the trailer deck during transport. Designed for transport by a C-130 or similar aircraft, the system also meets all specifications for road transport.

Set up consists of leveling the trailer with the included corner jacks and erecting the monopod autotracking feed in preparation for reflector assembly. The sixteen reflector panels are then lifted into position, one at a time, and attached by captive quick latching devices on each panel (no hardware to locate, no tools to drop). The pedestal, with antenna and feed, is then raised into position using a self-contained mechanism on the trailer.

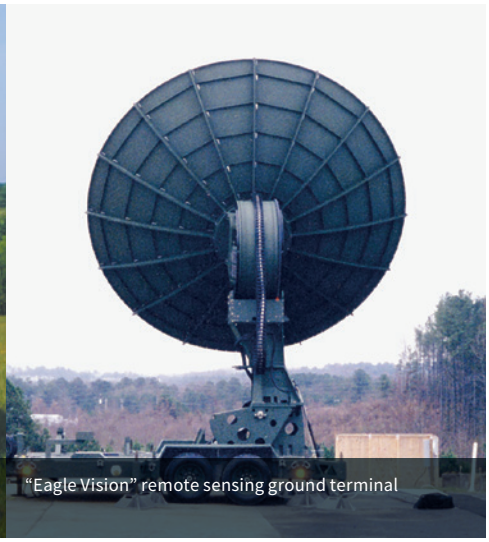
The Operator Control System (OCS) allows for multi-satellite pre-mission planning, automated pre-pass system set up and alignment, system performance integrity analysis, signal routing assignments, remote system control, and programming for post mission analysis and maintenance.

The station includes a GPS-based timing subsystem that supplies precision time determination for satellite track scheduling.

5.4-meter mobile at-a-glance

- Sized for C-130 transport
- Rapid set up and tear down (3 persons, 1 day)
- Unique monopod feed design for precision alignment and high efficiency
- High G/T using dual shaped optics
- Automated operation and diagnostics
- X/Y pedestal axis layout eliminates overhead pass “keyhole”
- Dual polarization feed with high polarization isolation
- Trailer design accommodates a wide range of tow vehicles and contains special features unique to C-130 aircraft loading

The system shown here features a 16-panel 5.4 meter reflector, a high performance autotracking X-band feed, as well as Y- over X-axis pedestal configuration.



“Eagle Vision” remote sensing ground terminal

5.4-meter mobile X-band tracking system

RF SYSTEM SPECIFICATIONS

Reflector	5.4 meter 16 panel segmented aluminum reflector
Feed type	Monopod cassegrain autotrack
RF range	8.025 to 8.5 GHz
G/T elevation	
› **31.00 dB/K typical**	8.025 GHz @ 5°
› **31.50 dB/K typical**	8.025 GHz @ 10°
Polarization	Simultaneous RHC and LHC
Beamwidth at 8.025 GHz	0.45° (nominal)
Axial ratio	0.5 dB max

SERVO CONTROL PERFORMANCE

Track accuracy	<0.05° BRE one sigma
Pointing accuracy	0.089° BRE one sigma at 45° elevation angle
Pedestal position feedback	Dual speed resolvers
Control system	Station Control Computer (SCC) which allows: › Automated ephemeris data updates › Satellite pre-mission planning and scheduling › Automated pre-pass testing › Automated system performance integrity analysis › Signal routing › Satellite acquisition and autotrack › Program track back up › Complete antenna subsystem control
Servo controller modes	Manual, slave, scan, autotrack, and program track
GPS subsystem accuracy	› 5 m (CEP) when selective availability is disabled › 100 m (2d rms) when selective availability is enabled
GPS time mark	Synchronized to UTC within 1 µs

MECHANICAL/ENVIRONMENTAL

Travel limits (each axis)	
› **Electrical**	±90°
› **Mechanical**	±91°
Acceleration (each axis)	5°/s²
Velocity (each axis)	5°/s
Operating temperature range	
› **Outdoor equipment**	–40° to +55° C
› **Indoor equipment**	15° to 30° C
Humidity	
› **Outdoor**	100% condensing
› **Indoor**	85% non-condensing
Operational wind	72 km/h gusting to 85 km/h
Survival wind	180 km/h stowed at zenith

MOBILIZER/TRAILER

Overall dimensions in transport configuration (W×H×L)	2.54 m × 2.73 m × 6 m
Maximum towing speed	110 km/h
Tow attachment type	Pintle hook
Deployment time	3 persons, 1 day
Options	› S-band prime focus transmit only feed › L/S-band prime focus TX/RX feed › Redundant LNAs › Software modules for customer specific hardware › Customer-tailored training and instruction services › Fiber optic inter-facility links › Automated signal routing matrix › Depot and/or contract maintenance plans

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