



## 0.75 Meter Ku-Band TELOS

### Tactical Extension of Line-of-Sight

HC-BLOS Family of Products



Raytheon's 0.75 meter Ku-band TELOS is the world's only lightweight high-capacity beyond line-of-sight system.

#### Benefits

- Provides more than three times the range extension relative to existing long-range line-of-sight (LOS) systems
- Allows reduction or elimination of relay sites
- Enables operation over rugged terrain where LOS not possible
- Supplies high data rates up to 50 Mbps
- Provides very low latency compared to satellite communication (SATCOM) or LOS relays
- Compact design available in man-portable or mast-mounted configurations
- Enables operation on the quick halt goal of less than 30 minutes
- Delivers ease-of-use and remote control via graphical user interface
- Locates current position and heading; automatically aligns and acquires the distant end
- Optional Ka/Ku-band SATCOM capability

Tactical network range extension currently relies on SATCOM for beyond line-of-sight (BLOS) communication. SATCOM bandwidth is typically limited to several megabits and will continue to be expensive, have significant latency and is vulnerable to intercept and jamming. Use of high-capacity line-of-sight (HCLOS) systems for range extension can be problematic for difficult terrain profiles and often requires many physically vulnerable relay sites.

Tactical Extension of Line-of-Sight (TELOS) is a supplementary BLOS range extension system that makes use of a novel small-terminal high-bandwidth troposcatter

technology. Using either a roof-mounted or mast-mountable antenna comparable in size to LOS systems (approximately two feet in diameter), but using troposcatter propagation and modulation techniques, a link can be established that is up to several times longer than an LOS link without the need for vulnerable relays. As a troposcatter system, TELOS also allows operation over difficult terrain that would not be possible using LOS systems.

Part of the Raytheon high-capacity beyond line-of-sight (HC-BLOS) family of products, TELOS includes the HC-BLOS automated graphical user interface (GUI). This intuitive GUI

includes workflow wizards that are used to guide a non-technical operator through the setup of a troposcatter link in the shortest amount of time. Preplanned missions can be loaded as presets from which an operator selects and enables.

These attributes make the HC-BLOS family of systems easy to use and reduce the probability of operator error thus speeding up system setup.

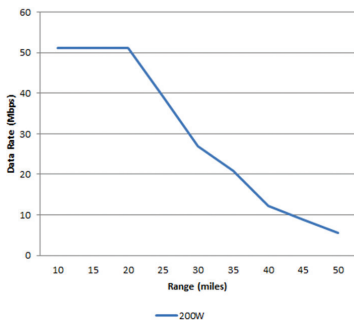
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### Variants

TELOS consist of two main components: the antenna unit and the electronics unit. The electronics unit consists of a control laptop and an 8 U electronics case. The 8 U electronics case houses the troposcatter modem, up and down converters, intermediate-frequency signal distribution tray, control computer, and router. The antenna component of the TELOS system is available in two variants:

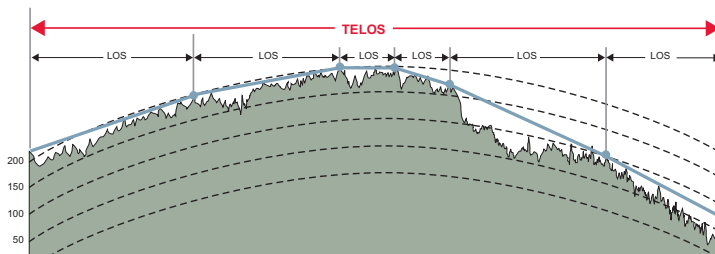
- **Vehicle mountable version:** This TELOS variant includes a motion-stabilized antenna and high-performance amplifier/radio frequency (HPA/RF) package mounted on a 6 meter telescoping mast.
- **Man-portable/fly away unit:** This is a fly away TELOS variant that can be transported in man-portable cases that include the antenna and the HPA/RF package.

### TELOS Tropo Performance vs. LOS



Ku-Band, 0.75 Meter Antenna,  
Temperate Climate (90%),  
Smooth Earth,  
Dual Diversity Link

### BLOS Significantly Outperforms LOS In Irregular Terrain



### Specifications

Operating Mode	Point to Point
Power Consumption	<3 kW
Antenna Size	0.75 meter Ku band
Data Rate	Up to 100 Mbps
Network Connection	10/100 Ethernet or RS530/422
Operational Temperature	-13°C to 55°C
Weight (Total of 4 cases)	440 pounds

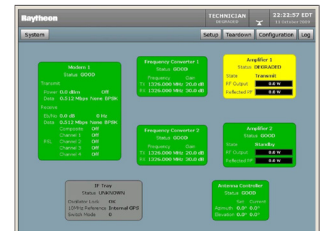
### Key Technologies

- **High-gain smaller aperture antennas:** At Ku band, a 0.75 meter antenna has an isotropic gain equivalent to an 2.4 meter antenna at C band.
- **Small-footprint power amplifiers:** low-power consumption super-linear technology provided in a small form factor.
- **Troposcatter modem:** RTM-40 is capable of incrementally scaling data rates up to 50 Mbps and RTM-100 is capable of 100 Mbps.
- **Automatic acquisition and link alignment software.**
- **Automatic bandwidth adjustment.**
- **Software monitoring and control via an intuitive GUI.**

### Common Equipment



- Frequency Converters
- RTM-40 TROPO Modem(s)
- IF Distribution/Test Panel
- Control Processor(s)



#### Laptop Terminal Control

- Remote Operation
- All Terminal Components
- Automatic-Antenna Alignment
- Adaptive Power Control
- Adaptive IP Data Rate

For greater ranges or less mobile requirements, alternative equipment is available.

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