

NEPTUNE™

Naval Enhanced Platform
for Tactical Unified Network Exchange



Right-sized SATCOM

TSS Solutions' NEPTUNE™ is a maritime SATCOM terminal built for security and defense operations that need dependable capability without the cost or overhead of oversized systems.



Resilient Networking

Integrated MESH networking enables resilient communications across distributed assets, supporting command, coordination, and situational awareness for military and Coast Guard missions.



Mission Alignment

NEPTUNE is engineered and priced to deliver mission-critical SATCOM performance without the expense of capacity, features, or complexity operators do not need.



Applications

Naval Operations

Fleet communications and coordination

Coast Guard

Maritime law enforcement and SAR operations

Maritime Security

Anti-piracy and border patrol

Disaster Response

Emergency communications and coordination

Commercial Maritime

Vessel tracking and crew welfare

Offshore Operations

Oil and gas platform communications



PHYSICAL SPECS

Antenna Diameter 45cm (18")	Environmental Rating IP67
Overall Dimensions 66cm (D) x 65cm (H)	Operating Temperature -20°C to +55°C
Weight 41kg (terminal assembly)	Humidity Up to 100% @ 40°C
Radome FRP composite construction	Vibration Damper Integrated rubber damper system



RF PERFORMANCE

Frequency Bands Tx: 13.75 - 14.5 GHz (Ku-band uplink) Rx: 10.7 - 12.75 GHz (Ku-band downlink)	Antenna Gain Tx: 34.38 dBi @ 14.25 GHz Rx: 33.11 dBi @ 11.75 GHz G/T: 12.3 dB/K (in radome @ 30° elevation, clear sky)
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POWER REQUIREMENTS

Antenna System

Input: 48V DC, 4.18A (antenna positioning)
ACU Power: 100-240V AC, 50/60Hz, 4-8A

Backup Power

Power Management: Intelligent power scaling; sleep modes

Total System Power (including BUC)

6W Configuration: 230W total system power
30W Configuration: Under development



STABILIZATION SYSTEM

Platform

3-axis
(Azimuth/Elevation/Cross-level)

Elevation Range

-20° to +95°

Azimuth Range

Unlimited (continuous rotation)

Cross-level Range

±30°

Tracking Speed

>90°/sec

Ship Motion Compensation

Roll

±20° at 8-12 sec periods

Pitch

±10° at 6-12 sec periods

Yaw

±8° at 15-20 sec periods



SYSTEM INTEGRATION

Modem Integration

Annex 30b ku Compatible: Optimized for steerable beam and On-Board-Processor capabilities

MESH Networking: Single-hop terminal-to-terminal communications

Latency: <380ms terminal-to-terminal in MESH mode

TSS-MESH Network Integration

Router: Optional Integrated Arista-based software router

Self-Healing: Automatic path optimization and failure recovery

Interoperability: Seamless integration with Annex 39b satellite MESH functionality

Control Systems

ACU: 19" rackmount 1U Antenna Control Unit Tactical Option under Development (DRAFT)

Interface: Multi-language GUI with touchscreen capability

Connectivity: Ethernet, USB, RS-232C, RS-422, NMEA 0183

Setup Time: <5 minutes from power-on to operational



OPERATIONAL CAPABILITIES

Maritime Domain Awareness

Real-time radar, AIS, and sensor data sharing

Multi-vessel coordination and tracking
Integration with command-and-control systems

Network Resilience

Self-healing MESH topology
Automatic failover and load balancing
Multi-path routing optimization
Network monitoring and diagnostics

Environmental Performance

Sea State Operation: Full functionality to Sea State 5, operation to Sea State 7

Weather Resilience: Maintains connectivity in tropical storm conditions

Corrosion Resistance: Marine-grade materials and coatings

Communication

Voice: VoIP and PSTN gateway services

Video: HD video conferencing and streaming

Data: High-speed internet and file transfer

Messaging: Secure tactical messaging systems