TSS SOLUTIONS

NEPTUNE™

Naval Enhanced Platform
for Tactical Unified Network Exchange

NEXT-GEN MARITIME SATCOM TERMINAL

Naval Operations
Fleet communications and coordination

Coast Guard
Maritime law enforcement and SAR operations

Maritime Security
Anti-piracy and border patrol missions

Disaster Response
Emergency communications and coordination

Commercial Maritime
Vessel tracking and crew welfare

Offshore Operations
Oil & gas platform communications

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.

NEPTUNE is based on a 45cm stabilized antenna platform with a strong service history in maritime environments. It operates on ITU-R Annex 30b Ku-band networks and delivers consistent, high-throughput communications in rough seas and on-the-move conditions.

Mission Alignment

NEPTUNE is engineered and priced to deliver mission-critical SATCOM performance without paying for capacity, features, or complexity that operators do not need.

The system focuses on essential operational requirements, preserving performance without unnecessary overhead.

PHYSICAL SPECS

Antenna Diameter
45cm (18")

Environmental Rating
IP67

Overall Dimensions
66cm (D) × 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

POWER REQUIREMENTS

Antenna System

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

Total System Power
(including BUC)

6W Configuration:
230W total system power

30W Configuration:
Under development

Backup Power

Power Management: Intelligent power scaling and sleep modes

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)

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

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 Services

Voice: VoIP and PSTN gateway services
Video: HD video conferencing and streaming
Data: High-speed internet and file transfer
Messaging: Secure tactical messaging systems

Network Resilience

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