TSS SOLUTIONS

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

TSS SOLUTIONS

NEPTUNE™ | System Details

PHYSICAL SPECS

Antenna Diameter
45cm (18")

Overall Dimensions
66cm (D) × 65cm (H)

Weight
41kg (terminal assembly)

Radome
FRP composite construction

Environmental Rating
IP67

Operating Temperature
-20°C to +55°C

Humidity
Up to 100% @ 40°C

Vibration Damper
Integrated rubber damper system

RF PERFORMANCE

Frequency Bands
(configuration dependent)

Standard Ku
Tx: 13.75 - 14.5 GHz
Rx: 10.7 - 12.75 GHz

Appendix 30B
Tx: 12.75 - 13.25 GHz
Rx: 10.7 - 11.70 GHz

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)

POWER REQUIREMENTS

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

Power Management
Intelligent power scaling; sleep modes

Total System Power
(including BUC)
6W Configuration: 230W total system power

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

Appendix 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 software router

Self-Healing: Automatic path optimization and failure recovery

Interoperability: Seamless integration with Appendix 30B satellite MESH functionality

Control Systems

ACU: 19" rackmount 1U Antenna Control Unit
Tactical option under development

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

Low probability of intercept/low probability of detection (LPI/LPD) waveforms, jam resistance through steerable-beam capacity, low-visibility operations

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

Network Resilience

Self-healing MESH topology
Automatic failover and load balancing

Multi-path routing optimization
Network monitoring and diagnostics

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