



The use of wide band satellite frequencies (C, Ku, X, Ka) to provide high bandwidth services to earth station antennas that can continuously track satellites and maintain communications links while in motion has opened up new markets for SATCOMS On-the-Move (SOTM) applications on land, at sea, and in the air. New generations of satellites, including Ka-Band High Throughput Satellite (HTS) systems, with more global coverage and bandwidth, and the power to deliver greater capacity to smaller terminals, make mobility OTM and OTP services more practical and affordable than ever.

Today's SATCOMS On-the-Move (OTM) ground systems provide high bandwidth communications to in-motion antenna terminals mounted on moving vehicles in a variety of market segments, from land-mobile, to maritime, to air, including:

- Military and Homeland Security networks
- Emergency Response networks
- Airborne communications
- Maritime – commercial shipping, offshore energy, cruise, and leisure vessel communications
- Land and maritime fleet asset, freight, and logistics management
- Passenger broadband services – Maritime Cruise, Aero, Rail, and Bus lines

SpaceBridge products provide solutions to a variety of industry requirements for SOTM and OTP terminals.

On-the-Pause (SOTP/OTP)

SATCOMS On-the-Pause (OTP) ground systems can be deployed rapidly where no telecoms infrastructure exists, in remote and extreme locations, in some cases in a matter of minutes, to provide instant global high-bandwidth connectivity.

On-the-Pause (OTP) solutions employ similar and overlapping technologies, also can face similar technical challenges and environments as SATCOM on On-the-Move.

First Responder teams, military troops, and special forces, and other types of users can require quick-assembly, auto-pointing, “flyaway” terminals, or “Manpacks” that are lightweight, provide maximum portability and rapid satellite bandwidth access. These OTP terminals can be vehicle mounted as well.

SpaceBridge provides all-outdoor, rugged, weatherized integrated VSAT router products for both civilian and military grade networks to meet these kinds of network requirements, and address their satellite resource, signaling, security, and service challenges.

For Military land OTM and OTP requirements, the U7800 – Standalone / ASAT™ System Dual Waveform Satellite Modem is a unique unit designed to meet intense demands in the field.

SATCOM On the Move (SOTM) Stabilized Tracking Antenna

SpaceBridge products also provide solutions for applications in Maritime, and Land Mobile where higher performance, larger, stabilized auto-tracking antennas enable full mobility. These can be SOTM systems on mobile platforms such as:

SoTM Maritime Vessels

Commercial maritime fleets
Cruise ships
Oil Rigs and Off-shore energy facilities
Leisure vessels

SoTM Land Vehicles

Land-mobile fleet communications systems
Passenger transportation systems (Rail, Bus, Ferries)
Military land-vehicular forces



For both Maritime and Land-mobile installations, the SpaceBridge U7800 – Standalone / ASAT™ System Dual Waveform Satellite Modem is a powerful, versatile and high-performance VSAT router.

SATCOM On-the-Move (SOTM) to Low-Profile Antennas.

SOTM applications that use low profile electronically steerable, flat panel, and similar antennas include military Land Vehicular forces, Unmanned Aerial Vehicles (UAVs), and Unmanned Ground Vehicles (UGVs). Commercial applications include train and long-haul public transport systems, as well as land-mobile fleet management, and “connected car” systems.

For reasons of aerodynamics, portability, weight, stealth, and other performance criteria, these systems can employ Low-Profile Antenna (LPA), Flat-Panel-Antenna (FPA), Electronically-Steerable-Antenna (ESA), Phased Array or similar antenna technologies, instead of mechanically steered antenna reflectors.

To meet satellite operator specifications and deliver required bandwidth through these kinds of antennas, signal spreading techniques can be required. SpaceBridge products can offer DSSS (Direct Sequence Spread Spectrum). Spread Spectrum applications can also be employed in military networks to conceal transmitted signals and overcome intentional jamming.

For military and UAV-mounted links, the Spacebridge U7800 – Standalone / ASAT™ System Dual Waveform Satellite Modem is a unique unit.



Ultimate Series ASAT™ System Advantages for SOTM / OTP

As part of the Ultimate Services ASAT™ product line, SpaceBridge integrated Maritime and SOTM / OTM VSATs offer these advantages:

- A powerful and versatile integrated VSAT modem / router for enterprise and telecoms applications with IP data rates as high as 500 Mbps down and 300 Mbps up.
- OpenAMIP antenna interface for interoperability with auto-pointing / auto-tracking antenna controller and applications for SOTM.
- Options to Leverage sophisticated network management, acceleration and optimization tools to support Data, Voice, Video, Broadband Internet, Wi-Fi, and 3G/4G/LTE cellular backhaul.
- RCSX™ Return Link technology, WaveSwitch™ on-the-fly and automatic 3-waveform switching.

WaveSwitch™ – Adaptive Waveform and Bandwidth

SpaceBridge WaveSwitch™ technology offers unique advantages for Mobile SATCOM (SOTM). On-the-Move applications are throughput-hungry. Traditional VSATs using MF-TDMA satellite access can efficiently share capacity among users, but this limits terminal throughput bit rates. Dedicating SCPC channel capacity to each terminal or link in order guarantee high data rates can be very inefficient and waste satellite capacity. SpaceBridge WaveSwitch™ technology lets satellite modems switch automatically and on-the-fly between MF-TDMA and SCPC waveform. WaveSwitch™ can adjust SCPC terminals' bandwidth to optimally meet varying traffic requirements at any given instant. With WaveSwitch™ SOTM/OTP terminals can be set to only consume bandwidth when traffic and mission priorities require it, while remaining "always-on" the network.

SpaceBridge's SATCOM on The Move verticals consist of:

- Defense
- HLS
- Emergency Response
- Airborne
- Maritime
- Commercial shipping
- Offshore energy
- Maritime cruise and leisure vessel
- Aero
- Rail
- Bus lines
- SpaceBridge provide solutions to a variety of industry requirements for SOTM & OTP Terminals.

ALL THINGS CONNECTED

Vehicular

Passenger Broadband | WiFi Wireless on Trains | Buses | Ferries. People want to stay connected and enjoy their wireless quality of experience, anytime and wherever they go — including during long trips. Train lines, bus lines and even ferry services are adding Broadband, WiFi, and wireless voice services for passengers.

SATCOMs-on-the-Move (SOTM) technology can deliver high-speed connectivity to moving passenger transportation vehicles, even as they traverse large and remote or rural areas without terrestrial wireless coverage.

However, deployment of these kinds of satellite networks can pose challenges such as:

- Seasonal, temporary, and large fluctuating traffic and bandwidth requirements.
- Satellite terminal performance antenna limitations due to size, weight, and aerodynamic low-profile requirements.
- Complex tracking antenna terminals that can require high satellite power resources.
- Satellite link optimization and integration for 3G/4G/LTE cell/micro-cell backhaul

For land-mobile Satcoms-on-the-Move platforms, the SpaceBridge ASAT™ System Ultimate Series U7400 is a powerful, versatile, high-performance VSAT router available as a weatherized outdoor unit or 1RU rack-mountable unit that meets the challenges of land-mobile operation. It can power satellite Broadband IP, Wi-Fi, and 3G/4G/LTE cellular backhaul service for moving vehicle passenger services, with sophisticated network management, acceleration and optimization tools.



With **WaveSwitch™**, satellite capacity usage can be optimized to meet changing vehicle traffic requirements over time to minimize recurring satellite expenses. When a vehicle or train is at a remote location beyond the terrestrial network **WaveSwitch™** can provide very high satellite bandwidth. In locations with terrestrial wireless, such as urban areas, the WaveSwitch™ always-on satellite link can be reduced to low bit rates, saving capacity.

Emergency Response / First Responder Communications

Natural and man-made disasters can destroy or disable critical communications infrastructure in an area. They also can strike in locations beyond the telecoms network. Vehicular Satellite On-the-Move (SOTM) and On-the-Pause (OTP) networks provide rapidly deployable solutions for delivering immediate on-the-scene broadband and IP bandwidth for First Responder and Emergency Communications.

SpaceBridge offers VSAT satellite modems and routers that are ideal for quick-deploy configurations – to help civilian or government emergency teams establish voice, data, video, and wireless communications they need in order to conduct effective operations.

ALL THINGS CONNECTED

Vehicle-Mount Emergency Communications

The ASAT System Ultimate Series U7400 – is a powerful, versatile, high-throughput and performance VSAT router for land mobile SATCOMs On-the-Move (SOTM). Quickly deploy satellite Broadband connectivity at IP data rates as high as 500 Mbps down and 300 Mbps up. Leverage sophisticated network management, acceleration and optimization tools to support services like broadband Internet, Wi-Fi, and 3G/4G/LTE cellular backhaul.

The SpaceBridge U7400-VSAT for the Cellular industry can also be deployed to provide satellite backhaul connectivity from an Emergency 3G/4G/LTE cell tower vehicle.

WaveSwitch™ technology lets satellite modems switch automatically and on-the-fly between MF-TDMA and SCPC waveforms, so they can select the most efficient use of satellite capacity in emergencies, and allocate needed bandwidth to the appropriate site terminal.

Land-Mobile Fleet Management

For land vehicle fleets that cover large geographic areas, SATCOMs-On-the-Move networked Fleet Management systems can ensure operational efficiency and control, cut excess expenditures, and streamline operations and customer service. SATCOMs-on-the-Move systems can provide high-speed two-way connectivity to vehicles, in order to support diverse fleet management functions, from tracking and reporting vehicle location, maintenance, fuel and freight data, to field operator and driver communications.

For Land Mobile Fleet Management networks, including services that employ low-profile vehicle-mount antennas and spread-spectrum transmissions, SpaceBridge's Ultimate VSAT series terminals offer DSSS (Direct Sequence Spread Spectrum) and the OpenAMIP interface for interoperability with On-the-Move tracking antenna products, and advanced IP networking tools and performance advantages.

Airborne

Mission-Critical Airborne, Unmanned Aerial Vehicle (UAV) and Beyond Line-of-Sight (BLoS) SATCOMs

SATCOMs-on-the-Move technology in Ku, X, and other frequency bands provides high-bandwidth data to support a variety of Unmanned Aerial Vehicle (UAV) missions, including:

- High-throughput links for Relay UAVs to complete data acquisition missions rapidly
- HD video transmissions by surveillance UAVs
- Trunks from UAVs to deployed troops beyond line-of-sight (BLoS)

SATCOMs-on-the-Move technology can provide vital Command, Control and Communications (C3) beyond enemy lines, from theater to a rear Command or Headquarters, or back to a home country for tactical high-speed UAV Beyond Line of Sight (BLoS) links.

For UAV-mounted links, the Spacebridge U7800 - Standalone / ASAT™ System Dual Waveform Satellite Modem is a unique unit designed to meet intense operational demands. As an Ultimate Series VSAT, it supports point-to-point SCPC connectivity as well as hub-spoke RCS MF-TDMA, ASCPC™ and SCPC including optional mesh overlay connectivity. Offering Government-grade encryption, VLAN and IPsec VPN, wide range transmit and receive range and built-in OpenAMIP for SOTM antenna interoperability are just some of the features of this compact, optionally DC-powered unit.

Bandwidth and Waveform Switching On-Demand

UAV missions require high capacity links, but not always on a continuous and constant basis. SpaceBridge WaveSwitch™ technology is especially suited to supporting the dynamic nature of military operations and sporadic missions. WaveSwitch™ efficiently allocates high throughput links to terminals only when needed.

UAV-mounted terminals employ small footprint/low profile antennas (LPAs) for aerodynamics and stealth. Spread Spectrum transmission can be required in order to meet satellite operator and user transmission specs thought these kinds of terminals. In addition, Spread Spectrum signals may also be desired to mitigate risk of detection and jamming in defense applications.

Maritime

Maritime Connectivity over Satellite

Maritime businesses are being transformed as satellite networks make global broadband 24x7 communications at sea more affordable, accessible and powerful. SATCOMs-on-the-Move technology delivers unmatched bandwidths and coverage at sea for maritime communications services around the globe, for a wide range of industry applications, including: commercial fleets, transport, fishing, cruise lines, oil tankers, and offshore platforms.



SpaceBridge offers a set of SOTM VSAT terminal router and modem solutions for Maritime communications. Our satellite modems are designed to support all-outdoor above-deck installation. They simplify deployment and maintenance, and deliver highly efficient satellite links.

SpaceBridge products enable a wide variety of maritime applications such as:

- **Data links** for voice, data, and video to monitor and control assets and operations.
- **Internet access** – including broadband connectivity for business, and cruise line cabin services and Wi-Fi, and crew Welfare
- **Wireless / Cellular / Wi-Fi** service for passengers
- **Surveillance** and monitoring: from security to engine diagnostics and reporting, to container sensors and status, to fuel, freshwater and other resources.
- **Fleet management** and enterprise automation
- **Inventory and freight tracking**, delivery, logistics, and status monitoring
- **HD Video and heavy data backhaul** for specialized applications, such as ocean drilling and exploration.

Government and naval fleets also have mission-critical applications such as Command & Control, remote equipment and asset monitoring, crew welfare, and live surveillance that demand high bandwidths the SATCOMs-on-the-Move technology delivers.

SpaceBridge **ASAT™ System Ultimate Series VSAT** can meet the most demanding maritime mobility requirements. For indoor operation for land-mobile Satcoms-on-the-Move platforms, the SpaceBridge U7800 is a powerful, versatile, high-performance VSAT router for enterprise and telecoms applications. As Ultimate Series VSATs, these units can deliver superior link performance with IP services speeds up to 100 Mbps download and 100 Mbps upload. Our products come with the OpenAMIP antenna interface for operation with auto-pointing and on-the-move auto-tracking antenna controllers used in maritime SATCOMS.

Maritime services can pose unique technical, operational and business challenges. Depending on the type of vessel or platform these can include:

- Seasonal, temporary, and large fluctuating traffic and bandwidth requirements
- Roaming, satellite and beam switching / handovers
- Complex terminals that require high satellite power resources
- On-board Cellular – roaming network (3G/4G/LTE)

Spacebridge's WaveSwitch™ technology lets satellite modems switch automatically and on-the-fly between MF-TDMA and SCPC waveforms. WaveSwitch™ can adjust SCPC terminals' bandwidth to optimally meet varying traffic requirements at any given instant. With WaveSwitch™, terminals can be set to only consume bandwidth when traffic and mission priorities require it, while remaining "always-on" the network. The U7800 modem/router gives you the sophisticated IP network management, acceleration, and optimization tools to power telecoms and enterprise services.

For maritime Cellular networks, customers can leverage SpaceBridge **Mobile and Cellular 3G/4G/LTE backhaul/connectivity** solutions.