

The U7900 is a professional satellite modem designed for hybrid operation across GEO, MEO, and LEO satellite constellations, seamlessly integrating with the ESTELLA VSAT platform to deliver high-performance connectivity over High Throughput Satellite (HTS) networks.

Fully compliant with the DVB-RCS2 open standard, the U7900 modem incorporates SpaceBridge's innovative WaveSwitch™ technology, enabling error-free dynamic switching between TDMA and SCPC return-link waveforms to maximize spectral efficiency and optimize network performance under varying traffic conditions. With support for both Layer 2 and Layer 3 networking, the U7900 provides exceptional deployment flexibility for a wide range of mission-critical and commercial applications, homeland security, defense, Enterprise, Cellular Backhaul (CBH) and government communications.

The U7900 is a high-performance L2/L3 satellite modem/router delivering up to 700 Mbps downstream and 50 Mbps upstream throughput. Supporting the OpenAMIP standard and SpaceBridge's DVB-RCS2 Annex M-compliant multi-beam mobility technology, it enables seamless beam switching and uninterrupted connectivity for maritime, land-mobile, and other mobility applications across HTS and multi-orbit satellite networks. With integrated L2/L3 optimization, the U7900 is ideally suited for VSAT-connected cellular backhaul and enterprise networks, featuring cellular traffic compression, 4G/LTE/5G GTP acceleration, and satellite optimization of IP traffic transported within VLANs and Layer 2 tunnels

### Key Features

- 5000MHz DVB-S2X forward link. Highest spectral efficiency via highly granular MODCODs, low roll-off rates and Adaptive Coding and Modulation (ACM)
- DVB-RCS2 TDMA return channels supporting QPSK-16 QAM and up to 5% roll-offs Dynamically selects optimal block size, and MODCODs per timeslot/per carrier, per frame interval (every 26.5msecs) to maximize spectral efficiency and throughput
- SpaceBridge WaveSwitch™ return link waveform offering equivalent to SCPC efficiency and performance, fixed latency and low jitter
- WaveSwitch™: Hitless (error-free), dynamic switching between 3D-TDMA and dSCPC services could be accomplished every 26.5msecs
- Traffic optimization: Performance Enhancement Proxy and QoS, enhancing user experience and conserving satellite bandwidth
- Layer-3 / Layer-2 traffic and CBH optimization for easy integration with MNOs
- Cellular backhaul and enterprise traffic optimization - ideal for 2.5G/3G/4G and LTE/5G
- Optional : Cellular traffic decryption/encryption

### Application and Uses

- True broadband capabilities for L2 applications ranging from SMB office productivity to rural communities connectivity
- Enterprise and mission-critical connectivity
- 2G, 3G, 4G and LTE/5G rural Cellular Backhaul links
- Critical communications satellite-as-backup links



# U7900 – High-Performance 500 MHz DVB-2X/DVB-RCS2 Networking Satellite Modem/Router, optimized for GEO, MEO and LEO Satellites

## FORWARD LINK (Rx)

Instantaneous Bandwidth	Up to 500 MHz
Frequency Range	950-2150 MHz
Waveforms	DVB-S2/S2X: QPSK to 256 APSK, all Code Rates
FEC	LDPC/BCH, Short and Normal Frames
Symbol Rate	From 100 Ksps to 476 Msps
Encapsulation Modes	GSE and GSE-Lite (Optional for DVB-NIP)
Link Variation Mitigation	Adaptive Coding Modulation and AULPC
Channel Roll-off/ Spacing	5%, 10%, 15%, 20%, 25%
Terminal IF RX Interface	F-type 75 Ohm, satellite/band independent, DiSEqC; LNB power OFF/13VDC/18VDC, 22KHz tone ON/OFF

## RETURN LINK DVB-RCS2 MF-TDMA (Tx)

Waveform Technology	DVB-RCS2, all MODCOD
FEC	16-State (2D)-TurboPhi
MODCOD	QPSK, 8PSK, 16QAM, all Coding Rates
Synchronization	NCR/PCR integrated
Encapsulation Modes	RLE Encapsulation
Symbol Rate	From 156 Ksps to 100 Msps
Channel Roll-off/ Spacing	5%, 10%, 15%, 20%, 25%, 35%
Link Variation Mitigation	<ul style="list-style-type: none"> <li>Built-in Uplink Power Control (ULPC)</li> <li>Adaptive return carrier sizing every 26.5msecs</li> </ul>
Dynamic Rate Assignment (DRA)	<ul style="list-style-type: none"> <li>Adaptive block size and MODCOD per timeslot/per carrier, every 26.5msec</li> </ul>
Tx Power	-30 dBm to 0 dBm
Terminal IFL TX Interface	F-type 75 Ohm, 950~2400 MHz satellite /band independent, BUC timing reference - OFF/10MHz/50MHz reference, BUC Power - OFF/24V DC selectable

## Return Link WaveSwitch™ (Tx)

dSCPC	SpaceBridge high efficiency proprietary TDMA block mode concatenation (i.e. eliminates TDMA overhead) to provide equivalent to SCPC grade service, sizing carrier symbol rate every frame
DRA	WaveSwitch™ carrier size and MODCOD selection every 26.5 msec.
WaveSwitch™	Hitless (error-free) switching from 3D-TDMA to dSCPC and back
Symbol Rate	From 156 Ksps to 100 Msps

## QoS and PEP

QoS	Up to 8 flows QoS, based on ToS/DSCP, IP addresses, protocol and ports
Application Optimization	L2/L3 and GTP Performance Enhancement Protocol (PEP), compresses streams and significantly reduces return link TCP ACK (improves return link utilization and saves up to >50% return link ACK related bandwidth)
AAA (Authentication, Authorization, and Accounting)	X.509 Certificate-based Authentication
Security	Optional: IPsec encryption up to AES256
Multimedia	Programmable VoIP, video-over-IP /video-conferencing detection and guaranteed QoS behavior

## TRAFFIC PORTS AND PERFORMANCE

Interfaces	User ports: 1x1000BaseT Ethernet MGMT ports: 1x1000BaseT Ethernet
Download speed	Up to 100Mbps
Upload Speed	Up to 25Mbps
Packet Processing	20kpps with full QOS and PEP enabled
Network Services	<ul style="list-style-type: none"> <li>Support Layer-2 and layer-3 traffic modes at same time</li> <li>Layer 2 VLAN and bridging</li> <li>Layer 3 NAT, DHCP server/relay, IP Routing</li> </ul>

## Environmental and Mechanical

Form factor	Indoor desktop enclosure
Dimensions (WxHxD)	17.125 x 1.75 (1 RU) x 10.7 inches 435 x 45 x 272 mm
Weight	7.5 lbs (3.4kg)
Power	<ul style="list-style-type: none"> <li>24VDC input: Dual fuse protection supporting 30W to U7780 modem and LNB and up to 100W to the BUC.</li> <li>Option: 100-240VAC, 47-63 Hz</li> </ul>
Operating Conditions	-4°F to 140°F (0°C to 60°C)
Humidity	10% to 90%, non-condensing