

500 MHz and Very High-Symbol-Rate (HSR) & High-Performance Multi-Orbit DVB-S2X Beam Hopping Forward Link Subsystem Engineered for GEO, MEO, and LEO networks, delivering industry-leading throughput, spectral efficiency, and service agility for broadband, mobility, cellular backhaul, and DVB-NIP broadcasting

The FLS-220X is a high-performance DVB-S2/S2X Forward Link BBFrames Processing and Broadcast Modulator platform designed for ESTELLA and ASAT-II DVB-RCS2 networks. Leveraging advanced DVB-S2X technologies, including Adaptive Coding and Modulation (ACM), Generic Stream Encapsulation (GSE), and GSE-Lite, the FLS220X maximizes throughput, spectral efficiency, and service availability across GEO, MEO, and LEO satellite networks. With an L-band transmit frequency range of 950–2450 MHz (1.5 GHz tuning range), supporting up to 500 MHz of instantaneous contiguous bandwidth and up to eight independently configurable carriers placed anywhere within the selected 500 MHz spectrum, the FLS-220X delivers carrier-grade performance for broadband access, mobility, cellular backhaul, enterprise networking, and DVB-NIP broadcast services. Its scalable architecture enables efficient delivery of IP unicast, multicast, and broadcast traffic while optimizing satellite bandwidth utilization and seamlessly integrating with ESTELLA's intelligent network management, dynamic capacity orchestration, and automated service provisioning capabilities.

Features

- Dual 1/10GBT Ethernet and dual SFP 10GBS traffic ports, quad 10/100/1000Base-T management ports
- Full DVB-S2/S2X compliance, including Time Slice Number (TSN) processing
- Integrated multiplexing of DVB-RCS2 signaling, user traffic, DVB-NIP services, and WaveSwitch™ control information
- Stratum-1 timing distribution with PCR/NCR generation, recovery, and re-stamping for network synchronization
- High-efficiency GSE/GSE-Lite encapsulation with optimized BBFrame generation
- Advanced ACM, dynamic MODCOD selection, and TSN processing for maximum throughput and link availability.
- Supports unicast, multicast, and broadcast services for broadband, enterprise, mobility, cellular backhaul, mission-critical and DVB-NIP applications
- Seamless integration with ESTELLA and ASAT-II Hubs for dynamic capacity management, QoS, and resource optimization
- Optimized for GEO, MEO, and LEO networks with scalable carrier-grade performance

FLS-220X Forward Link Subsystem for ESTELLA and ASAT-II VSAT Platforms

Technical Specifications

FORWARD LINK TRANSMISSION

Waveform – DVB-S2/S2X	- QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK 64,800-bit Normal and 16,200-bit Short frame support - LDPC/BCH FEC – all code rates - ACM, VCM and CCM support - Annex M - Signal processing: Linear & Non-Linear Predistortions
Carrier rate/Bandwidth/Roll-off	0.05 to 476 Msys - Up to 500MHz for ESTELLA - Up to 125MHz for ASAT-II - Roll-off from 5% to 35% - Pilot insertion
Annex-M/ Multi-stream Mode	Non-Time sliced or Time sliced - Up to 8 Time Slices (TSN) - Up to 8 streams (ISI)
Data Throughput	Up to 2.4 Gbps
RF Output	- L-Band: 950 MHz to 2450 MHz, -35 dBm to 0 dBm, N-type(F) 50Ω 10MHz reference NCT/PCR insertion

MANAGEMENT

Management interfaces	- Web interface GUI - SNMP v2c and v3, TRAP and INFORM notification - CLI - Front panel (full control and MGMT) - Serial RS232 / DB9 Connector
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CLOCK & SYNCHRONIZATION

Synchronization	- Internal High-Stability 10 MHz Reference Frequency OCXO - External 10 MHz input for RF synchronization - External 1 PPS input for NCR/PCR initialization NTP Server
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TRAFFIC INTERFACES & ENCAPTULATION

Data/MGMT Interfaces	2x 1/10GBE SFP traffic data, and 2x 1/10GBE RJ45 traffic data inputs 4x 100/1000BT MGMT interfaces 8xASI traffic data inputs - Standard ETSI TS 102 606-1 - Supports up to 4,000 GSE label-to-route mappings
IP-GSE Encapsulation & BBFrames	- Network/Program Clock Reference (NCR/PCR) Insertion - MAC mapping - BB Frame Short/Long and Dummy frames
MPE Encapsulation (for legacy ASAT-II Platform and Broadcast applications like OTT)	- Up to 4000 independent components (PID) - L2 or L3 Multiprotocol encapsulation (DSM-CC) - Standard & QinQ VLAN support - MAC mapping - Section packing - Traffic Management (shaping, policing, priority) - Program Clock Reference (PCR) Insertion

MECHANICAL & ENVIRONMENTAL

Form factor	1 Rack mount
Dimensions (W x H x D)	19.0"x 14.8" x 1.72" (483 x 376 x 44 mm)
Weight	17.64 pounds (lb) (8Kg)
Power	90 to 240 VAC 47 to 63 Hz Consumption: 100W
Power Supply Redundancy	Dual Redundant 300W built-in Power Supplies
Temperature	32~122°F (0~50°C)
Relative humidity	10%~90%, non-condensing
Operating Altitude Above Mean Sea Level (AMSL):	Up to 10,000 feet (3000 meters) with temperature derating with altitude of 5°C/1,000 m AMSL

