Product Brochure

SkyEdge IV Aquarius Pro Modem with SCPC Mode

Specially designed software-defined, multi-orbit modem with SCPC capabilities

Ultra - High - Performance Modem for Next- Generation Satellites

The SkyEdge IV Aquarius Pro with SCPC capabilities offers ultra-high performance over next-generation VHTS GEO and NGSO constellations. It is the ideal solution for ultra-high throughput trunks up to 750Mbps per direction for a wide range of fixed and mobility applications including broadband, 4G and 5G backhauling, commercial maritime and cruise ships, and corporate enterprise services.

The SkyEdge IV Aquarius Pro with SCPC capabilities offers the flexibility to operate in either Star or Point-to-Point topologies. In Star topology, as part of a SkyEdge IV network, it supports efficient central hub communication with multiple remote sites, while in Point-to-Point topology, it ensures dedicated, high-capacity links between specific locations. This dual capability maximizes network flexibility and scalability, providing a versatile solution for diverse deployment scenarios.

The SkyEdge IV Aquarius Pro is designed to provide uninterrupted service, supporting next-generation software-defined satellites. It enables seamless operation, "make before break" NGSO satellites handover, switching between GEO and NGSO or between different GEO satellites. To provide continuity of service for these use cases, SkyEdge IV Aquarius Pro is equipped with dual transmit/receive interfaces and fast adaptive reconfiguration capabilities on both the forward and return channels supporting satellite on-the-fly changes.

When operating in Star topology, the SkyEdge IV Aquarius Pro exhibits ultra-high processing capacity, achieving above 2Gbps aggregated throughput and ultra-high packets-per-second processing.

Maximum Spectral Efficiency

Gilat's innovative transmission technologies deliver exceptional performance and space segment efficiencies with the highest availability. The enhanced performance air interface includes in the forward direction Wideband DVB-S2X carriers up to 500Msps with seamless Adaptive Coding and Modulation (ACM) with very low SNR (VLSNR) ModCods. In the return direction, Gilat's Elastix- SCPC (eSCPC) and TDMA access incorporate Gilat's unique advanced FEC coding XDC, delivering the industry's highest spectral efficiency, widest dynamic range and highest granularity and availability.

Benefits

- Software-defined modem offering SCPC capabilities
- Designed for ultra-high throughput trunks up to 750Mbps per direction for applications including broadband, 4G and 5G backhauling, commercial maritime and cruise ships, and corporate enterprise services
- Supports multi-orbit GEO and NGSO satellites with seamless 'Make-Before-Break' satellite switching
- Integrated MEF-based Layer-2 and Layer-3 services
- S2X Air Interface for maximum spectral efficiency and highest terminal availability
- Flexible management, for independent control with local management capabilities or central user management
- Open standard interfaces for Antenna (OpenAMIP) and BUC (OpenBMIP)
- Unique RF combining capability enables higher reception levels over existing terminal antennas of up to 3dB

Aquarius Pro

Metro Ethernet Forum (Mef) Based Layer-2 and Layer-3 Services

The SkyEdge IV Aquarius Pro delivers Layer-2 and Layer-3 based services. L2 services utilize MEF-based standards to enhance network performance, manageability, and interoperability to enable extended standard terrestrial Layer-2 connectivity over satellite. Rich Layer-2 connectivity options include advanced Layer-2 QoS traffic prioritization enabling the support of multiple applications behind the Aquarius Pro.

Unique RF Combining Capabilities

The SkyEdge IV Aquarius Pro features unique RF combining capabilities. By utilizing dual receive antennas to gain up to 3dB more power, this modem doubles the achievable receive throughput. This innovation allows the use of smaller antennas while achieving the same performance levels as a single large antenna, making it ideal for high-performance deployments constrained by antenna size.

Enhanced Flexible Service Management

The SkyEdge IV Aquarius Pro is part of a complete VSAT ground system that includes an advanced Network Management System (Elastix- TotalNMS) facilitating service management, monitoring and control, over-the-air software deployment and rich northbound interface for integration with external orchestrators and OSS.

In addition, the Aquarius Pro offers a fully independent mode with rich local management capabilities or central user management.

Technical Specifications

General

Fixed and Mobility VSAT
Multi orbit operation NGSO/GEO
Frequency Bands: C, Ku, Ka

Forward Channel

Standard: DVB-S2X ACM
Carrier Rate: 5 Msps-500 Msps
Roll-off: 0.05, 0.10, 0.2
MODCODs:
BPSK-S 1/5 – 256APSK ¾
(seamless MODCOD switching)
SNR range: -9.4dB-21dB
FEC: LDPC, BCH

Return Channel

Elastix-Access:
eSCPC (Elastix SCPC)
Carrier Rate: 512Ksps (GEO)
1 Msps (MEO) – 250Msps
Roll-off: 0.05, 0.10, 0.2
Modulation:
BPSK, QPSK, 16QAM, 64QAM
SNR range: -15dB-15dB
FEC: XDC

SCPC Channel

Standard: DVB-S2X ACM
Carrier Rate: 5 Msps-250 Msps
Roll-off: 0.05, 0.10, 0.2
MODCODs:
BPSK-S 1/5 – 256APSK ¾
(seamless MODCOD switching)
SNR range: -9.4dB-21dB
FEC: LDPC, BCH

Throughputs:

Star - 1500/750 Mbps
SCPC - 750/750 Mbps

Enhanced Features

Layer 2 Services:
Utilizing MEF based standards
Types of Services:
E-LINE ACCESS, E-LINE TRANSIT
(Based on MEF 51.1)
Interface types:
UNI/ENNI
(untagged, 802.1q, 802.1ad)
Operation & Maintenance:
End-to End OAM Transparent forwarding
OVC Management – based on MEF 7.3, MEF 60 and TMF640
IP Features:
IPv4/IPv6, DHCP, NAT/PAT, DNS Caching, IGPMv3, VLANs, VRFs, RIPv2, BGP, Static Routes
QoS
CIR, MIR, CBR, DiffServ and priority-based queueing
Embedded Application Acceleration & Protocol Optimization
TCP Acceleration, GTP Acceleration

Security

AES-256 bit link encryption, ACL Firewall, X.509, Terminal Authentication

Management Interface

Secured Web-based local management, remote software upgrades over the air, NMS remote management, SNMP

Modem Interfaces

RF Input / Output:
2xTX / 2xRx N-Type 50Ω
RF in frequency: 950-2150MHz
RF out frequency: 950-2400MHz DISEqC

LAN Interfaces

6*10/100/1000 BaseT + 2*10GbE SFP
M&C 5*10/100/1000 BaseT
Antenna: OpenAMIPv1.17
BUC: OpenBMIP

Environmental & Mechanical

Form Factor: Rack Mount
Dimensions (LxWxH) mm:
420x445.1x44.5
Power Consumption: 135W
Operating Voltage:
100-240V AC 48V DC
Dual Power Supply
Operating Temp: -5°C - 50°C
Certifications: CE, FCC, EMC

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