Product Brochure

SkyEdge IV Aquarius-e DS

Software-Defined
Multi-Orbit Modem

Ultra - High - Performance Modem for Military and Government

The SkyEdge IV Aquarius-e DS is an ultra-high performance modem available in multiple form factors designed for operation over next-generation Very High Throughput Satellites (VHTS) and GEO and non-GEO (NGSO) constellations. The SkyEdge IV Aquarius-e DS was designed to support flexible satellites servicing a wide range of fixed, on-the-pause and mobility applications.

The SkyEdge IV Aquarius-e DS offers unmatched versatility with its two form factors: a standard 19" rackmount and a card-only version for seamless integration within terminals. This dual-option approach provides satellite operators with the flexibility to choose the best fit for their infrastructure, allowing for greater adaptability in various deployment scenarios. The rackmount version is ideal for traditional installations, while the card-only form factor enables innovative configurations that optimize space and operational efficiency.

The card-only version of the SkyEdge IV Aquarius-e DS stands out for its minimal footprint, designed to be integrated directly inside the antenna. This integration significantly reduces deployment complexity, eliminating the need for external housing and long cable runs. By embedding the modem within the antenna, it simplifies the overall setup and accelerates installation timelines.

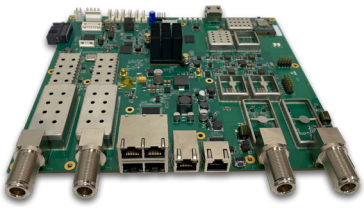
SkyEdge IV Aquarius-e DS is designed to provide uninterrupted service, supporting next-generation software-defined satellites. It enables seamless operation, "make before break" NGSO satellites handover, switching between GEO and NGSO or between different GEO satellites. To provide continuity of service for these use cases, SkyEdge IV Aquarius-e DS 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.

The SkyEdge IV Aquarius-e DS modem exhibits ultra-high processing capacity, achieving above 400Mbps aggregated throughput and high packets-per-second processing.

Benefits

- Ultra-high throughput and high PPS processing
- Available in multiple form factors
- FAR/DFAR compliant
- Designed for ultra-high data-intensive applications
- Software-defined programmable modem for seamless C5ISR operation over legacy and next-generation flexible satellites
- Supports multi-orbit GEO and NGSO satellites with seamless "make-before-break" satellite switching
- Integrated MEF-based Layer-2 services
- High performance air interface for maximum spectral efficiency and highest terminal availability - DVB-S2X Forward and TDMA/eSCPC Return
- Open standard interfaces for antenna (Open AMIP) and BUC (Open BMIP)

Aquarius-e DS



Maximum Spectral Efficiency

SkyEdge IV'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). In the return direction, Gilat DataPath's Elastix- SCPC (eSCPC) and TDMA access incorporate unique advanced FEC coding XDC, delivering the industry's highest spectral efficiency, widest dynamic range and highest granularity.

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

The SkyEdge IV Aquarius-e DS delivers Layer-2 based services utilizing MEF-based standards 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-e DS.

Enhanced Central Service Management

The SkyEdge IV Aquarius-e DS is part of a complete 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 orchestrations and OSS.

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

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, Header Compression

Security

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

Mobility

Seamless Make-Before-Break Beam/Satellite/Orbit switching
OpenAMIPv2, OpenBMIP

Modem Interfaces

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

Management Interface

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

Environmental & Mechanical

Form Factor:
Card
Rack Mount
Throughputs:
300/100 Mbps
LAN Interfaces:
5 x 10/100/1000 BaseT
Operating Voltage:
100-240V AC
24V (Card option)
Operating Temp:
-5°C - 50°C
Certifications:
CE, FCC, EMC

All registered trademarks are the property of their respective companies. This brochure is being provided for informational purposes only. The details contained in this document, including product and feature specifications, are subject to change without notice and shall not bind Gilat to a specific product or set of features related thereto.

DS_0034A MAR26