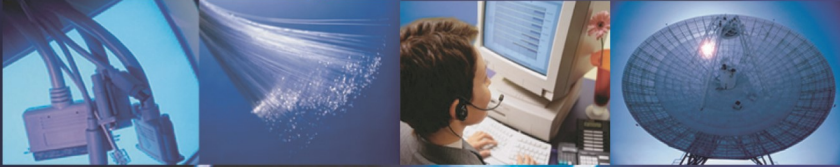# SATPATH *SkySwitch*™

SkyMesh™ 1/2/4200 Series Satellite Router
Packet Switching VSAT Network for Total Telecom Services
High Channel Efficiency VSAT Network

Applications:
- Mesh WAN Connections
- MCPC Voice & Video
- Remote Database Replication
- Internet Access, DVB-SCPC
- SCPC PTP and MCPC PTMP
- 3G/4G/LTE Wireless Backhaul
- COTM (On-the-Move) and COTP (On-The-Pause
- Emergency Response

Advantages:
- Mesh/Multi-Star Connection
- Lower RFT (BUC/ANT.) Cost
- Highest Channel Efficiency
- Fast Response Time

Features:
- Multiple Channels Router
- Data Rates up to 22.0 Mbps
- Low Latency LDPC
- 5% Roll-Off/Alpha Factor
- UPC & ACM/Power Boost
- Standalone or Network Mode
- Web GUI with Traffic Statistic
- Layer–3 Satellite Router
- Multicasting
- Traffic Filtering
- Automatic Beam Switching
- Connectivity Management
- Adaptive Bandwidth On Demand (ABOD)
- Automatic Tx Level Control

SkyMesh™ X200 series smart terminals offer unique capabilities to provide Packet Switching Multiple Access (**PSMA**) VSAT connection with on-demand connections for star, mesh, and multi-star VSAT network. PSMA network offers near 100% bandwidth efficiency in VSAT network connections. The terminal features high performance TPC and advanced LDPC for reduced spectral power of available transponder bandwidth.

Network structure can be programmed to support multiple topologies in a single network, and can be changed from one topology to another on the fly. SkyMesh™ smart terminals deliver user traffic via single-hop satellite link to their destinations.

SkyMesh™ smart terminals offer high efficiency, ease of use, low latency, IP routing, wide range of data rates from 8 Kbps to 13.8 (TPC)/22.0 (LDPC) Mbps per site in a single carrier. 100% channel efficiency means carrier data rate is same as data throughput because there is no multiplex framing overhead. 5% roll-off with precision reference guarantees 5% carrier spacing. Packet compression reduces bandwidth required for Internet traffic up to 3 folds. These advantages minimize OpEx of VSAT network.

SkyMesh™ smart terminals can join SkySwitch® VSAT network, an intelligent packet switching network with on-demand PSMA and **ABOD** (Adaptive Bandwidth on Demand), for bandwidth sharing among all sites in a network. Unlike competition requires keep-alive bandwidth per carrier under no traffic condition, SkySwitch On-Demand DAMA carrier does not require any bandwidth while idling.

SATPATH
Optimized Bandwidth Efficiency

SkyMesh™ X200 terminal can operate in **Standalone Mode** as a satellite router with high performance SCPC/MCPC digital modem(s). It can provide pre-assigned point-to-point and point-to-multipoint WAN connections to other SkyMesh™ remotes. Application in MCPC mesh connectivity is particularly suitable for real time traffic such as voice and multicasting videoconference.

When used in **Networking Mode**, SkyMesh™ smart terminals provide high performance on-demand WAN links to multiple sites including network hub, remotes, and remote traffic gateway sites. The ability for remotes to connect to two or more central sites allows direct traffic routing between corporate branches and their headquarters and by-passing hub.

Based on network structure as configured in NMCS, each smart terminal validates its own connectivity and does its own traffic filtering and routing. Each router's carrier is dedicated and sized to support the traffic of one site. Comparing with shared TDMA carrier, SkySwitch® carrier is smaller and uses smaller antenna and BUC.

Additional standard features include synchronous serial interface, built-in 1:1 redundancy, and interface to 3rd party antenna control unit for mobile OTM/OTP and maritime communications.

Optional DVB-S2 receiver is available for broadband access operation in DVB-SCPC. SkyMesh™ X200 provides highly efficient SCPC/MCPC return channel in broadband network.

SkyMesh™ X200 Terminal Specifications

Service Applications

- High performance, broadband IP, multiple 2-way services for mesh and multi-STAR networks VSAT links
- Multi-channels in 1, 2, 4, 5, 6, & 8 channels configuration

Access Methodology

- On-Demand Composite TDM Outbound Carrier using Packet Switching Multiple Access (PSMA)
- Contention Access Slotted Aloha Inbound (CSC-IB) to initiate DAMA activation
- SCPC / MCPC Inbound Carrier for IP traffic services Adaptive Bandwidth-On-Demand (ABOD) streamlining Inbound traffic to reduce Carrier rate with adaptability to match real time IP traffic demands

IP Features and Routing Function

- Intranet/Internet, Multicast, TCP Acceleration,
- RTP Header and Payload Compression
- Layer 3 Routing, L-2 Bridging with VLAN, -tagging DNS Caching
- QoS DSCP(TOS) traffic Prioritization; TCP UDP RIP ARP DHCP ICMP IGMP Telnet PPP FTP HTTP SMTP SNMP OpenAMIP, DRoSP

Mechanical & Environmental

- RJ-45, 10/100 Base T Ethernet Interface
- RS-232 Asynchronous Serial Interface to ACU
- RS-530 Synchronous Serial Interface (V.35 optional)
- AC Power, IEC-320 Interface 85-264 VAC 47-63 Hertz, 150 watts, -48VDC @ 2.8A optional
- Dimensions: 43 x 286 x 432 mm Rack Mount Unit
- Weight: 4.0 Kg
- Operational: 0 to +50 degrees Centigrade
- Humidity: Up to 95 % non-condensing
- Storage: -30 to +70 degrees Centigrade

Outbound Carrier

- Proprietary TDM with PSMA, or SCPC/MCPC
- BPSK/QPSK/8PSK/8QAM/16QAM/32QAM Modulation
- Turbo Product Code FEC, 0.72, 0.79, 0.87 Rates, Approx.
- LDPC Code FEC, 1/2, 2/3, 3/4, 4/5, 8/9
- Carrier Data Rate 8 Kbps to 22.0 Mbps, 1.05, 1.10, 1.20 or 1.30 Symbol Rate Carrier Spacing Options

Inbound Carrier

- Shared Slotted Aloha at 24/48 Kbps for initial network entry and DAMA
- SCPC / MCPC with ABOD for IP traffic
- BPSK/QPSK/8PSK/8QAM/16QAM/32QAM Modulation
- Turbo Product Code FEC, 0.72, 0.79, 0.87 Rates, Approx.
- LDPC Code FEC, 1/2, 2/3, 3/4, 4/5, 8/9
- Carrier Data Rate 8 Kbps to 22.0 Mbps 1.05, 1.10, 1.20 or 1.30 Symbol Rate Carrier Spacing
- Inbound Carrier rate adaptability to match actual site traffic Real Time Demand,

ODU Interface

- Transmit: 950-1850 MHz L-band 1 Hz step & 2.5 KHz soft step; selectable on/off +24 VDC @ 2.7A and 10 MHz Reference @ 5 dBm $5X10^{-8}$; Type F(f) Coaxial connector, 75 ohms, Level: -45 to -0 dBm in 0.5 dB steps
- Receive: 950-1850 MHz L-band 1Hz & 2.5 KHz soft step; selectable on/off +24 VDC @ 0.3A and 10 MHz Reference @ 5 dBm $5X10^{-8}$; Type F(f) Coaxial connector, 75 ohms, Level: -75 to – 35 dBm desired carrier

Options

- IF 70+/-18MHz Interface
- FSK Smart ODU M&C
- AES Encryption 256
- 1000 Base T with Jumbo Frame Support
- IF 70+/-18MHz Interface

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